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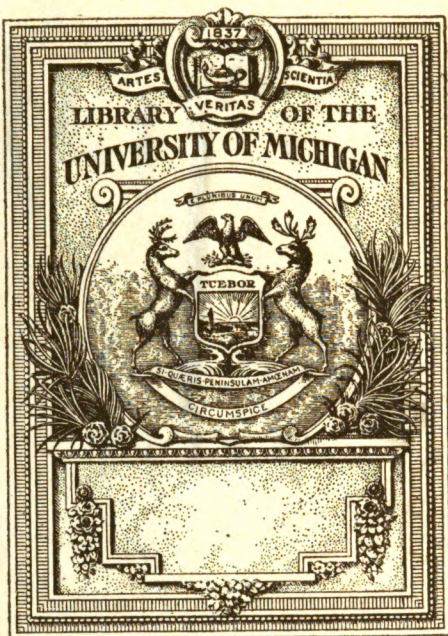
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THE
ZOOLOGIST:
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VOLUME THE TENTH.



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M.DCCC.LII.

Reasoning at every step he treads,
Man yet mistakes his way ;
While meaner things whom instinct leads
Are rarely known to stray.

COWPER.

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ADVERTISEMENT.

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THE ZOOLOGIST

FOR 1852.

Notes on the Zoology of the Isthmus of Panama.

By BERTHOLD SEEMANN, Esq., late Naturalist to H. M. S. Herald. *

AMERICA is generally divided into two zoological provinces, separated from each other by the barrier presented by the Mexican tableland. That the divisions are well characterized, few are inclined to dispute; but, it may be asked, was or is the barrier sufficient to check the progress of species? Confining ourselves to the tropics, it is possible to migrate from Guayaquil to Mazatlan, which may be considered their extremes on the western coast, without changing the temperature more than a few degrees—without ascending any mountains possessing a physical constitution different from that of the lower equinoctial region. That this passage has been adopted, is evident from the presence of several South-American species in Northern America. That many animals have passed the Isthmus without stopping is also proved. The armadillo, for instance, which indisputably belongs to South America, is found in no part of Panama, but again appears in the neighbourhood of Mazatlan, in latitude $23^{\circ} 12' N$. It is no less evident that the migration of animals, if not otherwise restricted by the change of food &c., could avoid the Mexican tableland by pushing from the North along the Gulf of California, a route which, according to recent researches, was that taken by the Aztec nations in passing to the plains of Anahuac. The Isthmus, therefore, in connecting the American continent, furthers not only the distribution of plants, but also offered facilities for the migration of animals, and without this passage many genera and species, now common to both countries, would probably have been confined to one.

* The following Notes will appear in M. Seemann's forthcoming work, — 'The Isthmus of Panama: Historical and Descriptive.'

Mammalia are represented in the Isthmus by a variety of forms.

Hosts of monkeys, including the white-headed Chapolin (*Cebus hypoleuca*, Gray), inhabit the woods. Bats are numerous: a kind of vampire is common, causing dangerous wounds in the cattle. *Diclidurus Freyreisii*, Gray, seems to be a bat peculiar to the Isthmus. The jaguar, or, as the natives call it, "Tigre" (*Felis Onca*, Linn.), and the puma (*Felis concolor*, Linn.), vernacularly termed "Leon," are destructive to cattle, but seldom attack man. A gray opossum (*Didelphis* sp.), called "Gato solo" from its solitary habits, is frequent. Several kinds of Cornejos or squirrels are met with. Rats and mice are in the Isthmus, as everywhere else, the plague of the dwellings. The Gato de pachorra, here and there observed, is a sloth (*Bradypus didactylus*, Linn.). Sajinos are frequent, but merely eaten by the dogs. Pigs are wandering in herds about the forest, and dreaded by the natives, who, upon meeting them, try to escape either by taking flight or by climbing a tree. The tapir (*Tapirus Americanus*, Linn.), Macho de monte, Danta, or Gran bestia of the Panamians, is the largest terrestrial animal of the Isthmian Fauna, although in comparison with the Asiatic species (*Tapirus Indicus*), is a mere dwarf. Its flesh is insipid, nevertheless it is eaten: medicinal virtues are ascribed to the hoof, which is taken for paralysis, and a decoction of it is administered to women after child-birth.

The only ruminating animal is the Venado, a species of deer (*Cervus*, sp. nov.?), met with in herds in the savanas. Its horns are not simple, like those of *Cervus rufus*, Cuv., a common Peruvian animal, but branched and divided. The Venado is about three feet high, and, when young, spotted with white dots; this colour, however, soon changes into a light brown. The meat, at first very tough, becomes tender when kept awhile, or boiled with Papaya. The hide is converted into a soft yet durable leather, well adapted for boots in so hot a climate. The Venados are easily domesticated. Mr. J. Agnew, a gentleman in David, had one which had been reared by a bitch, and possessed the habits of a dog, eating meat, running about the house, and following its master. The people of Veraguas have a curious mode of hunting them. The bone of a pelican's wing is covered on one end with a peculiar kind of cobweb, which forms an instrument imitating the cry of a young deer so closely, that the old ones, in the belief that some mishap has befallen their kid, repair to the place whence the sound proceeds, and are shot. The hunters frequently return with twelve or sixteen of them after one day's sport.

The sea, on the Pacific shore, is frequented by porpoises and black

fish, and the manati or sea-cow (*Trichechus Manatus*, Linn.), one of the herbivorous Cetacea or whale tribe, occurs on the coast of the Atlantic. It was well known to the buccaneers, who, in times of scarcity, were compelled to feed on it. The "Animal estranna," mentioned by Herrera in his 'Historia General,' is the same. The flesh is said to bear the appearance of beef, with the taste of pork, and the skin of the back, says an old author, is two fingers thick, and when dried becomes as hard as whalebone, and may serve to make walking-sticks.

Birds exist in great numbers. The humming-birds, macaws, and parrots are distinguished for the beauty and brilliancy of their plumage, wood-pigeons and turkeys for the delicacy of their flesh, while the Gallinazos (*Discolophus cristatus*), pelicans, and others, attract attention by their singular features and habits.

Reptiles abound. The scales of the turtle are an article of commerce. At the time of the discovery of the country, the Spaniards evinced a great repugnance for the iguanas (*Lacerta Iguana*, Linn.), and expressed disgust at seeing the Indians eat them. This feeling is now overcome, and the eggs as well as the flesh of these animals are considered as delicacies. It is not the only instance in which such a change has been effected. The use of tobacco, another Indian practice, was equally disliked; now no people indulge more in it than the Spaniards and their descendants. Alligators are numerous at the mouths of rivers, where they are found sunning themselves upon the muddy banks. It is amusing to see how motionless they are lying, listening to any noise, blinking with their great eyes; and directly a person is approaching, jumping into the water. Some of these animals are from 14 to 16 feet long. Their eagerness to attack man has often been stated, but there is reason to believe that they are cowards, like most animals belonging to the lizard tribe. I have only heard of a single instance of a person having been bitten, and that happened during the night, when he was wading through a rivulet. In the Rio Grande de Panama, children may be seen bathing while alligators are swarming around them. If the alligators were as rapacious as they are represented, such exposures would undoubtedly be avoided.

Both land and sea snakes occur; the former are sometimes 18 feet long. The coral snake (zonated scarlet and black), the Vivora (variegated black and brown), and the Voladora, or flying snake (of a lively green colour), are considered the most venomous. The Voladora lives in trees, darting with rapidity from branch to branch, which, having the appearance of flying, has given rise to the vernacular name.

Before the Cedron was known, many deaths occurred from the bite of snakes. The people used to wear — and still wear, in some parts of the country — around their necks or legs, an alligator's tooth stuffed with some herbs, as a charm against the bite. I once saw a boy who expired two hours after having been bitten, and in the afternoon the body was swollen to at least double its former size, presenting a frightful appearance. Great caution is therefore necessary; but fortunately the presence of a snake is generally known before the animal is seen or heard. The natives attribute this to a smell peculiar to these reptiles; but this smell not being perceived by Europeans, and the presence of the snakes notwithstanding known, it must be ascribed to some cause yet to be explained. Toads and other frog-like animals are most numerous during the wet season. A very minute species, beautifully spotted with black and red dots, is said to be used by the Indians to poison their arrows. The abundance of toads about Portobelo has often been noticed. Mr. Lloyd says, "So prodigious is their number after rain, that the popular prejudice is that the drops of rain are changed into toads (*de cado goto viene un sapo*); and even the more learned maintain, that the eggs of this animal are raised with the vapour from the adjoining swamps, and being conveyed to the city by the rains, are there hatched. The large size of the animals, however, many of them being from four to six inches in breadth, sufficiently attests their mature growth in more favourable circumstances. After a night of rain, the streets are almost covered with them, and it is impossible to walk without crushing some."

The number of fishes, especially in the Bay of Panama, early gave rise to the name of Panama, or "place where fish abound." The market of the capital is well stocked, in particular with rock cod, snappers, yellow-bellies, dolphins, whiting, soles, cat-fish, bonito, albicore, and young sharks. Devil-fish, sharks (some measuring 30 feet), and various other kinds, infest the sea-coast. The rivers are very prolific in fish. The Indians, in order to procure them, form parties, and after spreading a net across the shoal part of a river, commence driving the animals towards it by beating the water and by wild exclamations. On arriving at the net, the captives are killed by a blow, and thrown upon a raft, anchored for that purpose in the middle of the stream. A more simple method is that of stupifying the fish with the juice of the Manzanilla (*Hippomane Manzanilla*, Linn.), the bark of Espava (*Anacardium Rhinocarpus*, Deand), or the leaves of Barbasco (*Piper*, sp.) A net is placed from bank to bank, and the substances thrown into the river. The effect is surprizing: the fish instantly appear on

the surface, and are driven motionless against the net, where they are secured. The law has inflicted a punishment upon this mode of fishing, as it not only depopulates the rivers, but causes diseases among a people who use river-water for every domestic purpose.

Shells occur in great variety and beauty, and belong principally to the genera *Arca*, *Avicula*, *Buccinum*, *Cancellaria*, *Cerithium*, *Chiton*, *Clavagella*, *Columbella*, *Conus*, *Corbula*, *Cypræa*, *Harpa*, *Marginella*, *Murex*, *Micula*, *Næra*, *Oliva*, *Ostræa*, *Patella*, *Pecten*, *Phos*, *Pinna*, *Purpura*, *Pyrula*, *Scalaria*, *Solarium*, *Terebra*, *Triton*, *Trophon* and *Venus*. Species of *Arca* and two kinds of oysters are used as food: a purple die is obtained from the *Caracolilla* (*Purpura patula*, Linn.), and pearls from the *Avicula margaritifera*, *Bruguière*. Pearl-oysters are common on the whole coast of the Pacific Ocean, but are more abundant in the Bay of Panama. Balboa, when exploring the South Sea, was the first European who heard of their existence, having been presented with some pearls by the Cacique Tomaco. Shortly after this occurrence (1513) the pearl-fishery commenced, and has continued ever since. At present it is carried on by free labour, a diver receiving, besides his daily food, 15 dollars a month. In each dive, if successful, he is able to bring up a dozen shells, four of which he puts between the fingers of the left hand, and eight in the bend of the same arm, while his right remains free, for separating the shells from the rocks. The divers complain of the *Aguamalas*, or sea-nettles, species of *Medusa*, which cause a severe pain when touching the body, but they dread the shark, so frequently fatal to them. About thirty years ago, a diving-bell was sent out by an English company, but it did not answer expectation; the expense at which the concern was fitted out and supported was too great, and the oysters did not lie in banks, but were dispersed under rocks, and in uneven ground, while a peculiar ground swell and motion under the water, with a strong current, made it almost impossible to place the diving-bell in safety and to advantage. On being opened, scarcely a tenth part of the shells contain pearls, and even among those are many gray and bad-shaped ones, of little or no value. The pearls are sold by weight, varying in price according to shape and colour. The largest and most perfect one perhaps ever found on the coast of the Isthmus, was obtained at the Paredes Islands, and is in the possession of Mr. James Agnew, in David: it is three quarters of an inch in diameter, and perfectly round. The shell is a lucrative article of commerce, and much inquired after by French vessels; the animals themselves are strung upon a cord, dried in the air, and eaten.

Crabs, shrimps and prawns are obtained in any quantity. Spiders are numerous; and several kinds, with corneous spines and curiously-shaped bodies, are found in Darien. Scorpions are frequent; their bites produce the utmost pain, together with great swelling of the wounded part, and, in some cases, slight fever. The Garapatas or ticks (*Ixodes* sp.), which are literally swarming in the woods, are a very great annoyance to both man and beast. Adhering firmly to all parts of the body, they are only to be removed by scraping them off with a knife, or washing the skin with spirits. The dry season is most favourable for their development; during the wet they are not so frequent, but are then more than replaced by the Coloraditas, very minute red animals, which exist in the grassy plains in such prodigious numbers, and the pain they cause by introducing themselves into the human skin is of such an irritating nature, that they may justly be considered the greatest plague of the Isthmus.

The Nigua or jigger (*Pulex penetrans*, Linn.), another insect annoying to mankind, occurs principally on the higher mountains. It enters the tender parts of the feet, under the nails, between the toes, &c., and is not discovered until it has attained some size and deposits its eggs, requiring some skill to extract. Its ally, the common flea (*Pulex irritans*, Linn.), and most vermin common in cooler regions, are fortunately rare.

Beetles are not numerous, but those that occur are very beautiful. The carrion-feeders are scarce, while, on the contrary, those Coleoptera which subsist on vegetable substances are numerous, probably the natural consequence of the rapid decomposition of animal matter. Some are phosphorescent: the Cocullo gives so brilliant a light that it is possible to read by it; the women collect them in the sugar-plantations, for the purpose of decorating their hair in the evening, when they have the appearance of diamonds.

Myriads of fire-flies are swarming in the forest. Several species of cockroaches (*Blatta*, sp.), stick-insects (*Mantis*, sp.), and many other Orthoptera, among them various kinds of crickets, have been noticed. A cricket, the Cigarro of the natives, attains the length of six inches, and is probably the largest of these animals in existence. The Gorgojo (*Cicada*, sp.) has the peculiarity of making a sound not unlike the hissing of snakes, and strangers are apt to mistake the one for the other. When at Coyba, one of the officers of H. M. steamer "Sampson," had ventured some distance in the wood in search of game. All at once, wherever he turned, the hissing of snakes met his ear. He

hurried back to the beach, and arrived quite exhausted from the exertion he had made to regain a free place. The cause of the sounds was soon ascertained, and he became for several days the laughing-stock of his companions.

Of Neuroptera, dragon-flies and various kinds of ants may be enumerated. The Arriero (*Atta*, sp.) is about an inch long, and very destructive to plantations. It forms regular roads, occasionally from one to two miles long, and is always carrying portions of leaves, flowers, and other substances, mostly exceeding its own weight. A honey-bee is frequent, and being stingless, may be robbed of its stores without difficulty. Another species of bee produces a black wax, which is used for candles.

Butterflies appear in great numbers in the beginning of the wet season; but though some are of exquisite beauty and large size, the generality are small, and do not display that brilliancy of colours to which the eye is accustomed in the Tropics. Mosquitoes and sand-flies are the scourge of the sea-coast, but they are little experienced in the interior.

One of the most annoying animals to mankind is the Gusano del monte, or Guinea-worm, (*Filaria*, sp.) Entering the flesh, especially the vicinity of the knee, as a being almost invisible to the naked eye, it has grown, in about six weeks, to the length of an inch, and the thickness of a good-sized quill. The place where it remains has at first the appearance of a mere pimple, but gradually becomes more inflamed, causing stiffness in the legs, and extreme pain. The worm should be cut out, or else it will attack the bone. Unluckily, it is seldom discovered before it has attained some size, as the generality of people look upon the wound as a mere sore, and apply every remedy save the right one.

Domestic animals were unknown before the arrival of the Spaniards; they are now widely diffused, but have degenerated, probably as much from want of proper attention, as from the climate. Cats and dogs are small and lean; the latter, it is well known, terrified the Indians when first coming in contact with them; now, however, that the utility of dogs is understood, an Indian is seldom seen without a couple of them, and he will gladly exchange his produce to procure additional ones. In towns, the Barbary or Guinea dog, the most ugly of its race, is frequently seen. Never barking, and having a skin destitute of hair, it is a favourite with the old and infirm, who take it to bed with them, in order to warm their feet.

Pigs thrive tolerably well, and are kept on account of their lard, which to the Panamanian cook is as indispensable as butter is to the European.

The horses are small and lean. I once saw a European, who, on being offered a hackney horse, took the animal under his arm, and lifting it up, exclaimed, "Here is a thing for a man to ride upon!" The spectators were in a roar of laughter. The colour of most horses is gray, or rather a dirty white, and the price of a common cargo-horse is from 5 to 20 reals. Asses are seldom used, but mules are highly valued.

Goats are not extensively reared, and sheep mere objects of curiosity. Bullocks are seldom used as beasts of burden or of draught, and are so numerous, that not uncommonly 5000 or 6000 are seen grazing in one plain. Their price varies from 1 to 12 reals. On large estates, from 500 to 1000 are killed at one time; the meat, cut into strips, slightly salted, and dried in the sun, is sent, under the name of *Tasajo*, to Choco, where it obtains a good price. The hides, worth from 6 to 8 reals apiece, are shipped to the United States, the tallow to Peru. Cheese is made in small quantities; butter is hardly nominally known. Cattle are allowed to roam about at liberty, and have become wild, as is the case over the whole of tropical and subtropical America. In Southern Africa, where no more pains are taken to confine them, the horses and bullocks are meek, and keep in the vicinity of human habitations. The difference must probably be attributed to the number of carnivorous beasts with which the Cape Fauna abounds, while in the hotter portions of America, where few ferocious animals are met with, the herds may pursue their grazing unmolested, and therefore no longer seek the protection of man.

On poultry more care is bestowed. Domestic fowls have multiplied to a great extent: the value of a couple varies between 4 and 8 reals. It is reported, however, that some localities are unfavourable to their development. Mr. Lloyd asserts that at Portobelo fowls introduced from Carthagena or Panama cease to lay eggs, and that their flesh becomes tough and unpalatable. Turkeys, in some districts, are plentiful, and will fetch from 6 to 8 reals apiece. Ducks and Guinea-fowls are scarce, and geese unknown.

BERTHOLD SEEMANN.

London, December 6, 1851.

*Extracts from the Correspondence of Mr. H. W. Bates, now forming
Entomological Collections in South America.*

(Continued from page 3232).

Parà, June 3, 1851.

I now send the remainder of my Ega collection, not having found it convenient to send it by the "Princess Royal" to London, as I had informed you I should in my last. The alligator's skull is now imperfect, from want of teeth; I think they have been stolen by people in the house to make *charms* of. The birds I suppose are not a very fine lot, but there appear to be some rare things, as the blue Piosóca, a pair of a species of Aracaré I have not before seen, a male Ourami-meu, &c. In the insects there are I suppose some good things in Coleoptera. The large *Prionus* I suppose is a *Titanus*, but not the largest species: they are exceedingly rare and difficult to procure, turning up only by accident. The larger species has also occurred two or three times here, but I have not yet succeeded in getting a perfect specimen. Amongst the other longicorns and Curculiones, especially the genus *Gorgus*, I think there must be some new and fine things. I worked very hard for Coleoptera in Ega from the 1st of January to the 20th of March, being the showery and sunny season, before the constant rains set in. Whenever I heard of beetles seen at a distance, I would get a boat and go many miles after them, and employed a man (the only one disposed for such work in the whole village) with his family, who worked in some clearing in the forest, to hunt for me. Every day he brought me from ten to twenty Coleoptera, and thus I got some of my best things: so that I think I looked Ega pretty well, and the results may be taken as representing the products of the Upper Amazons. In Lepidoptera I send you one more of the new *Callithea*, and one *Hetæra Andromeda*, which, if you have not yet reserved a perfect specimen of in my previous collection, you will please to reserve for me: there are also two fine new *Papilios*. I believe, at every station up the Amazons to the Andes, one or two new *Papilios* would be found, they seem to be so local, *P. Sesostris* appearing to be the only species of this section common to all the stations.

I am here now in Parà, working very hard, and thinking what is best to be done next. After all, I think I shall *not* be able to settle at home in a quiet life, but at the same time think that the Amazons is now for the present pretty well worked; for although there is more difference in species than might be expected at the different stations

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on the river, yet it is not sufficient to repay such long tedious voyages and loss of time. The only branch-river at all practicable in the Rio Negro, which Mr. Wallace is working well, I have no doubt: the other practicable route is the main river to the Andes, a voyage from here of eight months, even if no delay takes place. The Tapajos is very unhealthy at present; 400 Indians, out of a small settlement there, having died of malignant fever in 1850, and the Government obliged to send food to the remainder to prevent them from starving.

Parà, October 8, 1851.

I now send you the result of my labours from May last to the present time. I have unfortunately lost six weeks by three illnesses, but during the last two months or ten weeks I have applied myself very closely to collecting, and think I have got together a very superior lot of insects, as to variety and quality of the specimens. Regarding the latter point, I always bear in mind your repeated advice; but it is not so easy a matter to get good specimens, as they often, when found, turn up bad, and even when taken fine, flutter so much in the act that they require the greatest care and long practice to secure fine; then there is the danger of ants, mites, *Dermestes*, &c. In the rarer species, when only three or four specimens turn up in a year's collecting, a *fine perfect specimen* ought to be highly valued. In the present collection I send a fine series of *Thecla*, many species for the first time, and some unique. In the *Papilios* are fine series of *P. Sesostris* and *Vertumnus*. In the *Heliconias* and *Nymphales* nothing new. The *Epicaliæ* were rare this year, and Parà has no great variety in *Heliconiæ*. As to my private collection, I find it impossible to ascertain correctly what species I lost in the "Mischief," so have set aside one specimen of all the species now sent; this will give you a little trouble, to select what are wanting for my private collection, but will not occur to so great an extent in future. Recollect that I do not want more than one *good* specimen of each sex and variety of any saleable species of *Lepidoptera* and *Coleoptera*, therefore all duplicates may be separated and sold; and when there is more than one number attached to one species, leave all the numbers pinned to the single specimen reserved for me, as they refer to notes in my books, and will be useful some day.

I have made up my mind to return to the interior, intending to make a short stay at Santarem, get a small canoe, and *deliberately* explore the river Tapajos as far as I can. Next to the Rio Negro, it

is the most practicable of all the branch rivers, and much more mountainous and picturesque than any of them. I have got here the most accurate information about it, and am quite sanguine that in Santarem I shall get the one thing needful to make the trip, *i. e.*, row-men. Our friends in England will now be well aware of the great difficulties of travelling in the interior here, from the letters of Mr. Spruce, who has fared rather worse than any of us, owing to the hostility of the authorities and natives.

You would receive by the "George Glen" my letters stating the death of poor Herbert Wallace and Mr. Miller; I have now to add another, our good-hearted friend Bradley, whom you will recollect as being a trader in the interior. He caught a fever in the Rio Negro last voyage, neglected himself, and came down to Pará in a dreadfully exhausted state last August, dying about a month ago. The health of the city has been wretched; since May last about 800 have died of small pox out of a population of 15,000, but we foreigners have all escaped it. I have had one touch of yellow fever, and diarrhœa twice, but am at present quite strong and well.

I intend at my leisure to make out a copy of my notes on the dragon-flies, their colours in life, &c., for you to send to the Baron de Selys.

With regard to maps and books, send me the two sections of the Maps of the Society for the Diffusion of Useful Knowledge, relating to the Upper Amazons, also a copy of the newest editions of all the cheap Museum Catalogues, a number or two of the 'Zoologist,' when any notes of mine are inserted, and the number (if possible) wherein the *Callithea Batesii* is described and figured. Any little work describing South-American birds and quadrupeds, not costing more than 15s. or 20s., such as Temminck's 'Manual of Birds,' either in English, French or Latin, would be of great service to me. Having these companions, and a little canoe with a good servant or two, I could explore the country to the Andes.

Ega was certainly a rich locality. I am convinced I could have done twice the amount there in the same time, if I had had funds and books. I was there ten months, and utterly lost three from being dependant upon a gentleman at whose house I was living, and whom I accompanied in his excursions. The fishes and reptiles were mostly different from those below, but I could not buy either bottles or spirits. I have frequently landed on islands in the main river, under circumstances when I could not possibly collect, and have seen many species of butterflies new to me, especially on one occasion swarms

of a small *Catagramma*; but my kind host could not stay an hour at the place, and I could have devoted a week profitably there. The virgin forest is richer there in the summer, from being higher, thinner, and drier, than here in the Lower Amazons.

In your list of numbers I notice with delight that I have found some new *Papilios*. *P. Zagreus* flew into a hut whilst we were encamped on a sand-bank at Ega, and a boy brought it to me dead and broken. I think I must have seen more of them, but thought it a *Heliconia*. Is not *P. Bolivar* an exceedingly lovely thing? If another new *Papilio* turns up, I hope Mr. Hewitson will name it *Orellana*, after the first heroic adventurer who explored the Amazons.

I have no new dragon-flies for Mr. Dale, having worked them well in 1848 and 1849. In my present collection are numbers of beautiful Hymenoptera, now sent for the first time. In the Coleoptera the chief things are a series of species of the genus *Gorgus* (*Schönh.*), allied to *Cryptorhynchus* (*Curculionidæ*). In life they are clothed with a short silky pile, arranged in pretty patterns according to the species. I have tried all methods of killing them, but cannot preserve the pile clean. Probably with the pounded laurel-leaves it may be restored. There are many different species sent, and all have the same habits, found on trunks of standing trees in the woods, gnawing the bark; when approached they feign death, and fall to the ground, where half the specimens one sees are lost among fallen leaves. As to the Diurnes, you may assure our old friends that I make great exertions to enable them all to complete their series of beautiful small and rare *Erycinidæ* and *Theclæ*, which are so very rare that a specimen only turns up now and then, in months of assiduous research.

H. W. BATES.

Some Account of the Douroucoulí Monkey, (Aötes trivirgatus, Humb.)
By H. W. BATES, Esq.

I HAVE had in my possession, since I left Ega in the month of March last, a living specimen of a very curious nocturnal monkey, which I suppose to be the *Aötes trivirgatus* of Humboldt, discovered by him in the forests of the Cassiquare, near the head-waters of the Rio Negro. My specimen was given to me in Ega, a country in many respects different from the region of the Cassiquare, being the flat level valley of the Upper Amazons, whilst the latter is a mountainous country. It was taken by a friend of mine in the forest there, whilst

falling timber, a number of them being concealed in a hollow tree, but this was the only one he secured alive. It is not at all uncommon there, and throughout the river Solimoens or Upper Amazons, as every one who saw my animal knew it. They say it lives in numbers in the hollows of trees (Humboldt, I believe, states that it lives in pairs), and that, whilst sleeping in the day-time, it is sensitive to the least disturbance; so that when a person passes by a tree where they are concealed, he is startled to see, aroused from their sleep, a number of little striped owl-eyed faces crowding a hole in the tree-trunk. It is a very singular animal, in its manners and general appearance very different from the typical monkeys, but showing by the structure of its hands and nails that it is very little removed from them. Its head is small and round, the face short, the muzzle not at all prominent; the separation of the nostrils narrow, mouth and chin small. The ears short, scarcely appearing above the fur of the head; the eyes large, owl-like, and of an ochreous brown colour. The nails of the fingers are slightly convex and rather narrow; the tail not prehensile. The molar teeth are studded with sharp points, showing that part of its natural food is insects. The size of the animal, which I am told is yet young, is as follows: — length of the body 10 inches, of the tail 12 inches. The colour of the fur, which is throughout soft and thick like that of the rabbit, is generally brownish gray, rather black on the crown and tip of the tail, speckled gray on the outside of the legs, and ochreous white on the under surface of the body. On the forehead it has the distinguishing marks which suggested the specific name, *viz.*, three longitudinal black stripes, the rest of the face being whitish.

The name by which the *Aötes trivirgatus* is known on the Upper Amazons is Ei-á. I suppose it must have been met with by Dr. Natterer, who explored so well several portions of the Upper Amazons. When I brought it down with me to Pará, I showed it to many persons at various places on the Lower Amazons, but no one appeared to know it. Since then I have been assured by several persons that it is found on the island of Marajo, and its peculiar habits were accurately described; they say it grows to twice the size, and becomes paler in colour. Its manners in confinement are such as one would expect from its habits in its natural state, and very different from those of the lively Cebi, so many species of which are kept in this country as pets. It sleeps during the day, seeking for this purpose any crevice where it can avoid the light, which seems painful to it. I put mine in an old chest, where I had a number of broad-mouthed glass jars; it selected one as its hiding-place, bolting in head first when alarmed, and turn-

ing round suddenly inside, would peep out on the danger with its broad glistening eye, with an effect quite comical. At night it is very restless, making a variety of muttering sounds with its mouth closed. At times, I have generally noticed that about midnight it several times repeats a louder note, like the suppressed barking of a dog. When approached gently it will allow itself to be caressed, but when handled roughly it takes alarm and bites severely, striking with its fore-hands and making a hissing noise like a cat. In walking, its fore-hands are not placed flat on a surface like those of the other monkeys, but it progresses on the palms and tips of the fingers, with its knuckles bent at a sharp angle, and the fingers stretched out widely; this gives it a curious appearance, especially when it is climbing up a narrow space, such as between a chest and the wall, in doing which it straddles the space and gets along rapidly. Its favourite food, next to the fruit of the papaw and bananas, is insects, especially *Acridia*, spiders, and cockroaches; raw or cooked meat it will not touch, and it is rarely thirsty. I have been told by persons who have kept it for a length of time roaming at liberty throughout the house, that it clears the house of *bats*, as well as cockroaches and spiders, and becomes very tame. From the prettiness of its features and the softness of its fur, it is a great favourite with every one. From its sleep during the day it is aroused at the slightest noise, raising its face with its large round blinking eyes to see the cause of the disturbance. The people here give it the name of *cara pintada*, or painted face, from the striped forehead, and are very much interested with it, as being a kind of monkey very rarely seen in the city of Parà, although the Parà people have opportunities of seeing all kinds of monkeys brought to the capital almost daily from different parts of the province.

H. W. BATES.

Parà, October 7, 1851.

Occurrence of a Seal at the Undercliff, Isle of Wight. — An unusual visitor made its appearance on the 19th. About 9 o'clock, A.M., a seal was seen disporting itself just outside the little break-water in Ventnor Cove. Information having been given to Mr. Wittington, of the Baths, he took his gun, and getting into a boat, obtained a shot at about twenty-five yards' distance. The charge evidently took effect in the head (which alone was visible) as shown by the struggles of the animal; it sank, however, before it could be secured, and though the boat remained a considerable time on the spot, nothing more was seen of it. It is stated to have been seen in the neighbourhood the day before. A good view was obtained of the head, as it was remarked to be "round like a bull-dog's, and no ears." It is to be hoped the body may be

picked up or washed ashore, that the species may be ascertained, but as the tide was ebbing at the time, and had still some hours to run, it is probable that this event, if it occur at all, will take place further to the westward. Since writing the above, I have learned from another informant that the seal was seen swimming about near the spot during the same afternoon; it is evident, therefore, that it was not killed. It appears to have since left the inhospitable shores of the Undercliff, probably muttering to itself, "I'll be shot if I stay any longer." — *George Guyon; Ventnor, Isle of Wight, November 28, 1851.*

On changing the Eggs of Birds for those of other Species. — I have mentioned how many birds may be deceived by their eggs being changed; of course, your readers will understand that these eggs must not have been at all sat upon. I heard of a gentleman who wished to have a rookery, having some fine trees fit for them; but he never could induce the rooks to build, until a friend suggested an expedient. There was a magpie's nest, with eggs, in one of the trees, and one day he watched the old magpies go to a considerable distance, and having some rooks' eggs which were not sat upon, he sent a boy up the tree, who took four of the magpies' eggs out, replacing them by five of the rooks', leaving one of the magpies' only. The hen magpie hatched the whole, and the young rooks were fed the same as their own. These rooks next season built a nest in the same tree, and so a colony was established. From the wary nature of the bird it is surprising that this *dodge* succeeded. In changing the eggs of birds, the following may be safely operated on, if the time of laying be within a couple of days or so:—the thrush and blackbird, the hedge-sparrow and linnet, the yellow hammer and corn bunting, the chaffinch and bulfinch, the goldfinch and little red linnet. There are also three species of tomtit that may be changed, if their nests can be easily got at. The different species of linnet may be safely changed. I do not think it succeeds to change the eggs of the nightingale, the redstart, or any of the migrating birds, they seem to be all of a more wild and delicate nature than our own hardy English birds. Most of the aquatic birds make their nests on the ground, among long grass, or on the rocks in some retired place. A strange exception to this occurs in the herons: these birds build in lofty trees, generally near some rookery. The rooks and herons seem to understand each other, and do not, I believe, contend for building-room. There is a famous colony of these birds at Heron Hall; I know of another at Brockley Hall, Somersetshire, the seat of I. H. S. Pigott, Esq.: this heron-haunt is situated close to a rookery, and although the young herons are frequently shot, the birds do not forsake their old birth-place. It is a curious anomaly the herons carrying fish from the marshes, which they catch with their long bills and bear to a great distance to the high trees. These birds require such peculiar food, that it would be useless to change their eggs with those of the granivorous rooks, their near neighbours.—*H. W. Newman; New House, Stroud, November 15, 1851.*

Habits and Instincts of Birds.—The gannet or Solan goose.—This bird deserves especial notice. Great numbers of them are bred in parts of Scotland, and they are an unerring guide to the fishermen on the west coast. Many years ago I was taken to the Island of Arran, in a fishing-boat, and on the passage the fishermen observed some dozen or two of these birds following a shoal of herrings; they raised themselves from about thirty to fifty feet in the air, and then descended with immense force, as

straight as an arrow, seldom missing their aim. The fishermen, with one consent, agreed to go in search of this shoal of herrings, and said they had only to look out for the Solan geese, which would never leave them as long as the light remained. The young gannet is considered a rarity by some people, but they taste rather fishy. In the year 1818 I had a day's sport with these birds on the Bass Rock Island; they are preserved for March, until the young are able to take flight. I went in the month of August, with a party of five guns, to this romantic-looking rock. We ascended to the summit, and placed ourselves at the edge of the precipice: the gannets generally came within thirty or forty yards before they could see us, but sheered off instantly. The few old ones we shot fell into the sea below, and we did not bag them; many flew away sadly hurt, for they take a heavy shot to bring them down, and I heard the pellets strike their wings plainly most times when I fired. A lovely summer day shone upon us as we returned to the hospitable table of a worthy old friend, who gave us a splendid dinner, including young Solan geese with spicy sauce, roebuck, grainer, mutton five years old, as all the delicacies of the season. The following description of the Bass Rock may be acceptable to some of your readers. It is about twenty miles from Edinburgh, two or three miles from the shore, "in the Firth of Forth, near Tantallon Castle, Haddingtonshire. It is of a circular form, about 300 feet in diameter, and about 1200 in circumference, nearly 400 feet high. Some parts of it project in lofty terrific precipices over the sea, and there are vast excavations round the base of the rock, caused by the water. The sea is of vast depth on the north-east and west, but shallow on the south, and is here accessible in calm weather by small boats. Various corallines and Fuci are produced in the surrounding sea. Vast numbers of Solan geese resort to the Bass Island in March, for the purpose of breeding, and deposit in September; they are strictly preserved during the breeding season by the owner of this beautiful and interesting rocky island." On the opposite coast, the splendid Rock of Ailsa, near the island of Arran, coast of Ayrshire, is well worthy the attention of the naturalist. This stupendous island is 900 feet in height, and two miles in circumference, and is the resort of the greatest number of wild sea-birds of any place I ever visited. The steamers in passing this rock generally fire off a small carronade, and immediately the air is darkened with the vast myriads of these wild-fowl; the island is also well stocked with hares and rabbits.—*Id.*

Specimen of the Honey Buzzard (Pernis apivorus) shot at Clenchwarton, near Lynn, Norfolk, November 11, 1851.—Whole length $21\frac{1}{2}$ inches. Beak black, cere lemon-yellow: head and neck buff-white, with brown patches, lighter on the nape, darker on the lore and ear-coverts, forming a conspicuous dark band inclosing the eye: on the lower part of the neck brown occupies a larger portion of each feather, leaving white tips, which gradually become smaller until they disappear entirely on the back and wing-coverts, which are dark brown, the inner webs and margins being slightly paler: the wing, from the carpal joint to the end of the longest quill-feathers (*viz.* the 3rd and 4th) $15\frac{1}{2}$ inches; primaries brownish black, first three deeply notched, fourth and fifth less so; inner web from the base to the commencement of the notch grayish white, irregularly barred and spotted with pale brown; secondaries brown, with dirty white tips: tail-feathers irregularly barred with two shades of brown, tipped with dingy white: chin white, throat white, with narrow longitudinal streaks of brown, the dark colour increasing in extent and brilliancy on the breast, especially along the shafts of the feathers; belly and flanks white, beautifully barred and streaked with dark brown: under surface of quills mottled with gray and brown, darker towards the points;

under tail-coverts dingy white, with light brown patches: naked part of the tarsi reticulated and yellow; toes yellow; claws gray at the base, black at the points. A very handsome and elegant male bird. Compared with that figured in Gould's 'Birds of Europe,' the colouring on the head of the present specimen is lighter, and that of the under parts darker.—*F. L. Currie; Clenchwarton, near Lynn, Norfolk, November 18, 1851.*

Occurrence of the Hobby (Falco subbuteo) at Clapham.—Thinking it might be worth recording in the pages of the 'Zoologist,' I am induced to inform you of the capture of the hobby in the neighbourhood of Clapham, near London. It was caught by a bird-catcher of the name of Johnson, while in the act of darting on one of his decoy-birds, a starling, about the last week in July. The specimen was forwarded for my inspection and name a few days since.—*C. Wood; Wandsworth Common, December 5, 1851.*

Honey Buzzard with a White Head and Neck.—I have in my possession a remarkably fine specimen of the honey buzzard, with the head and neck pure white: it was shot near Newark on the 16th of October.—*Hugh Reid; the Museum, French Gate, Doncaster, November 18, 1851.*

Occurrence of Montagu's Harrier (Circus cineraceus) at Eastbourne.—An immature specimen of this bird was obtained at the above place early in the autumn, and is now in the possession of Mr. Packham, Eastbourne.—*J. B. Ellman; Lewes, November 10, 1851.*

Tameness of the Redstart.—In this month's 'Zoologist' I observe that Mr. H. W. Newman says he has found from experience the redstart a very wild and shy bird (Zool. 3275), such however is not always the case. A few years since I was at a large school on the Rhine, and redstarts, or, as we used to call them, *fire-tails*, were very numerous, and as tame as the common house-sparrow. One spring a pair of fire-tails built their nest in our play-ground, in a hole in a wall about 3½ feet from the ground, laid eggs and reared their young in safety, for all agreed they should not suffer for their confidence. And whilst some eighty boys were engaged in noisy play just before their nest, they fearlessly passed to and from it every few minutes with insects for their little ones.—*J. W. Hulke; November 10, 1851.*

[I recollect a very similar instance. When at school at Compton, in Dorsetshire, a pair of redstarts nested annually in an outhouse which formed one side of the play-ground, and which presented a large flat surface, exactly suited for playing at a game then very popular, called "ball" or "fives." The ball was struck against the boarding of this building and bounded back into the play-ground, when it was again struck against the boards. Notwithstanding the noise of this continued series of blows against a sounding surface, notwithstanding the shouts and frequent brawls of the boys, the redstarts used to pass and repass through a circular aperture in one of the boards, caused by the falling out of a knot in the wood. My impression therefore rather agrees with that of Mr. Hulke than with that of my respected namesake. I may observe that we always called these birds "brand-tails."—*Edward Newman.*]

Occurrence of the Black Redstart (Sylvia Tithys) at Brighton.—A specimen of the black redstart was killed at Brighton on the 26th ultimo.—*J. B. Ellman; Lewes, December 3, 1851.*

Note on the Snow Bunting (Emberiza nivalis).—The snow bunting has made its appearance early this season. Several specimens were killed in the beginning of last month.—*Id.*

White Variety of the Great Titmouse (*Parus major*).—A pure cream-coloured titmouse was killed at Wilmington on the 24th ultimo.—*Id.*

Occurrence of the Bearded Titmouse (*Calamophilus biarmicus*) at *Lewes*.—A pair of bearded tits were killed last week among the Southover reed-beds, near this town.—*Id.*

Sepia-coloured Rook.—I suppose the last season was favourable to the development of abnormally coloured rooks, as I have the skin of a young bird, brought to me last summer, somewhat similar to that described by Mr. Newton in your last number (Zool. 3278). It is a perfectly grown and feathered young bird of the year, but instead of being black, it is of a uniform light sepia, the legs rather darker, and the beak somewhat lighter. It was shot about ten miles from Bury St. Edmund's, and therefore not likely to have any relationship with Mr. Newton's bird.—*C. R. Bree*; *Stowmarket*.

Occurrence of the Alpine Swift (*Cypselus alpinus*) at *St. Leonard's, Sussex*.—A specimen of this bird was seen sitting on a rail at the above place early last month, and was knocked down by a boy. It is now in the possession of Mr. Johnson, Chemist, St. Leonard's.—*J. B. Ellman*; *Lewes, November 18, 1851*.

Occurrence of the Black Grouse (*Tetrao tetrix*) in *Sussex*.—I have much pleasure in recording the till now doubted fact, that the black grouse is not yet extinct in this county. On the 30th ultimo a gray hen was wired about five miles from my residence by one of the "slippery gentlemen rovers of the night." The cock bird was seen by him, and its haunts discovered, but hitherto it has eluded his stratagems to become its possessor. I am not at liberty to name the place in your journal where the hen was captured, or the captor might get into trouble, otherwise I should have done so.—*Id.*

Occurrence of the Purple Heron (*Ardea purpurea*) at *Catfield, Sussex*.—An immature specimen of this bird was shot at the above place last month, and is now in the possession of a gentleman at Hastings.—*Id.*

Occurrence of the Spotted Redshank (*Totanus fuscus*) at *Selborne*.—A beautiful specimen of this bird was brought to me August 30, 1851. It was in an interesting state of plumage, with the breast and whole under part sprinkled with a mixture of gray and white, the back spotted with white. It was shot at Oakhanger, in this parish. I have the specimen stuffed.—*Thomas Bell*; *Selborne, Hants, November 24, 1851*.

Occurrence of the Great Snipe (*Scolopax major*) at *Botley*.—A fine specimen of the above bird was shot at the end of September, in the gravel-pits at Botley, near here, and has since been placed in the Ashmolean Museum. Its weight was eight ounces. I am informed that a specimen was shot about ten years since, very near the same spot.—*A. M. Norman*; *Christ Church, Oxford*.

Inquiry respecting a Species of Sandpiper.—On the 31st of October I received from R. Barnard, Esq., for preservation, a species of sandpiper in the flesh, which had been shot near Warwick. The species is quite new to me, and as it differs materially, both in size and markings, from Yarrell's description of the buff-breasted sandpiper, I forward a description of the bird. The beak is slender, and very slightly curved at the tip, $1\frac{1}{2}$ inch long; upper mandible deep brown, the lower one light brown, dark at the point: the feathers on the top of the head are brown, edged with buff, but the buff edges only show towards the sides of the head, where they become broader in proportion to the brown part: the back of the neck is brownish buff, minutely spotted with dark brown: back and wing-coverts dark olive-brown, each feather edged with buff; primaries brownish lead-colour, the broad web towards the quill white, banded and marked with blackish brown, the shaft of the first primary only white, the rest black,

the tips minutely edged with buff; tertials brownish lead-colour edged with buff, each feather marked with diverging bands of dark brown, ending in black spots near the buff border, and having a spear-shaped black patch at the tip, minutely edged with buff: tail-coverts brown, broadly edged with whitish buff, banded and spotted with black: the tail is rather large, cuneiform, the centre feathers $3\frac{1}{2}$ inches long, shafts black, web gray-brown, shading off into a whitish buff border, with a row of black spots all round; feathers on each side a bright fawn-colour, shafts and edges paler, with a similar zone of black spots, the last feather outside white, barred with black; all the tail-feathers, except the two outer ones, have a large, black, kite-shaped patch near the tip, with the remainder of the tip white: the chin white; neck whitish buff, with the dark centres of the feathers forming lines of spots: breast and sides whitish buff, with dark brown arrow-head markings near the tip of each feather, growing paler towards the abdomen, which, with the under tail-coverts, is white: under surface of the wings white, beautifully barred and marked with lead-colour: the whole of the neck is spotted with longitudinal bars, each feather being buff, with a straight, narrow, dark brown mark along the centre from base to tip. The legs are bare for three quarters of an inch above the joint; the tarsus measures 2 inches; legs and toes brown, claws black. Whole length of the bird, from point of beak to extremity of the tail 12 inches; from the carpal joint to end of the first quill-feather $6\frac{1}{2}$ inches; from the point of the beak to the gape $1\frac{1}{2}$ inch; gape to occiput 1 inch.—*Hugh Reid; the Museum, French Gate, Doncaster, November 18, 1851.*

Occurrence of the Curlew Sandpiper at Fleetwood.—Whilst at Fleetwood, in this county (Lancashire), during the month of September last, I picked out three fine specimens of the above bird, from among a number of purres which were killed by my brothers during a morning's "shore shooting." They are all in the winter plumage; one, I think, is a male, from the greater redness of the neck, but am not sure of the sexes, as I forgot to request the man who set them up to take notice of this particular. Two of the birds I gave to the Salford Borough Royal Museum, and the third has found a place in the Museum of the Manchester Natural History Society.—*Jno. G. Leeming; The Adelphi, Salford, December 2, 1851.*

Occurrence of the Little Stint at Fleetwood.—During the autumn of 1850, when at Fleetwood, one of my brothers brought home a nice specimen of the little stint, which he had killed on the river Wyre. It is also added to the collection of British birds forming at the Free Museum and Library in this town.—*Id.*

Occurrence of the Gray Phalarope (Phalaropus platyrrhynchus) at Carshalton.—On Thursday last a gray phalarope was shot in my place at Carshalton. It had been observed swimming about the river for some time.—*S. Gurney, jun.; Lombard St., November 22, 1851.*

Occurrence of the Harlequin Duck in Banffshire.—A specimen of the harlequin duck was shot on the Spey, near Gordon Castle, in October last. This bird has since passed into my hands; it is a young female of the year, in a state of plumage not described by Mr. Yarrell, but agreeing with that detailed by Temminck in his 'Manuel d'Ornithologie':—"Les jeunes de l'année sont variés de brun et de blanchâtre; mais ils se distinguent par les taches blanches qui se dessinent sur les côtés de la tête:"—ii. 878. I believe this is only the eleventh instance of the occurrence of this species in Great Britain.—*Edward Newton; Elveden Hall, Thetford, December 10, 1851.*

Occurrence of the Pomarine Skua (Lestris pomerinus) at Hastings.—A pair of this bird, so scarce upon our coast, were shot at Hastings in the early part of last month.

One is in the possession of my friend Mr. Vidler, of Pevensey, and the other is in Mr. Johnson's possession.—*J. B. Ellman ; Lewes, November 18, 1851.*

Tenacity of Life in Reptiles.—The tenacity of life exhibited by all the Reptilia is so well known, that there is perhaps little novelty in the following instance ; I shall however record it, with your permission, in the 'Zoologist.' A specimen of the common viper (*Pelias Berus*), about a foot in length, was brought to me on the 10th inst. Having procured a bottle of whiskey, and placed the reptile in a wide-mouthed phial, the latter was filled up with the spirit to the very cork, leaving no breathing-space, at 10 minutes past 7, P.M., precisely ; in half an hour's time it was still living ; and on examining the bottle at 25 minutes past 9, to my astonishment, and, I may add, disgust, the unfortunate reptile showed evident signs of life by a strong movement when the bottle was touched, after an immersion of two hours and a quarter ! After a few minutes I tried the bottle again, but the reptile then appeared, like many creatures of a larger growth, to have yielded up its life at the altar of Bacchus. I recollect on a former occasion that a slow-worm (*Anguis fragilis*) lived half an hour in the same spirit. Can you inform me of a quicker mode of killing reptiles ? I have heard that creosote is soon fatal, but never tried its powers. — *George Guyon ; Ventnor, Isle of Wight, November 14, 1851.*

Notes on the Fishing Frog (*Lophius piscatorius*).—As a few notes on the anatomy of that curiously developed fish, the sea devil, or fishing frog (*Lophius piscatorius*), may not be uninteresting to some of your ichthyological correspondents, I venture to offer the following on a specimen that was caught at the Aust passage, on or about the 1st of November, and exposed for sale in this city. It was about 3 feet long, 2 feet 6 inches from the tip of one pectoral fin to the other, and weighed 56 lbs. It much resembled a huge tadpole in form, whence its name of fishing frog. The anal fin is wanting, but it possesses ventral and pectoral fins, which are of a flabby nature, bearing more resemblance to the paddles of one of the cetaceous group, than to the fins of osseous fishes. The pectoral fins are placed behind the ventral, and just behind these is the operculum, which is comparatively very small. The skin closely resembles that of the dog-fish, being devoid of imbricated scales. In another point, also, it is like the cartilaginous fishes, viz., in the formidable rows of teeth with which its huge jaws are armed, but these are, I imagine, rather for the retention of its prey than as weapons of defence, as they are movable, yielding only in one direction, viz., inwards ; but a still closer affinity is presented in the structure of the skeleton, which possesses the merest trace of osseous matter, and that only on its external surface, by far the greater part being cartilage. In one respect, however, it is similar to some of the osseous fishes, viz., in possessing an air-bladder. There are present two well-developed kidneys, with a large central cavity but no uriniferous tubes. Two finger-like appendages lie at the pyloric extremity of the stomach, and a good-sized liver with a gall-bladder as large as a moderate-sized orange: the *bulbus arteriosus* is also well developed. The intestines are about 4 feet long, abounding in Entozoa imbedded in the mucous membrane. I think, on comparing these observations, you will agree with me in judging this fish to form an intermediate link between the osseous and cartilagi-

nous fishes, rather than as belonging to the position in which Cuvier and some others have placed it. I forgot to mention an important point in the anatomy, which is that the fins are articulated to a well-developed carpus. This fish is rather a favourite with the fishermen, as its prey is principally that adversary to their interests, the dog-fish.—*John N. Duck ; Kingsdown, Bristol, November 13, 1851.*

Revival of Eels after being partially frozen.—Dr. Kirtland of Cleveland states that last winter, as the frost set in, a number of eels in a mill-pool, incommode by the subsidence of the ice, effected their escape into some adjoining ponds, from which, by breaking the ice, he obtained about eight or ten bushels in a half-frozen state. "During the night they were placed in a cold and exposed room, and were literally as stiff and almost as brittle as icicles. The next morning a tub was filled with them, into which was poured a quantity of water drawn from the well, and they were then placed in a warm stove-room for the purpose of thawing. In the course of an hour or two the family were astonished to find them resuscitated, and as active as if just taken during the summer. The experiment was repeated with a number of tubfuls during the day, and with similar results." The effects of frost on animal life is a subject to which at the present time naturalists at home and abroad are paying much attention ; and they may add this to their store of facts and data.—*Chambers's 'Edinburgh Journal,' November 29, 1851, p. 349.*

Repair of the Shell in Mollusks.—In one of my rambles on the beach at this place last spring, I discovered a shell of the common snail among some seaweed recently cast up, and on its outer surface there stood up, at right angles, a portion of the shell about a quarter of an inch square, precisely like a buttress to a wall. I imagine that some accident had, during the snail's life-time, forced out this portion of shell into the position it now occupies, and a new shell had formed over the place thus laid bare. This notion seems strengthened by the circumstance that the portion of the shell that now covered the place from which the up part appeared to have been raised, was considerably paler than the rest of the shell, as if more recently formed.—*George Guyon ; Ventnor, Isle of Wight, November 14, 1851.*

Curious Action in a Spider.—A short time since I was entertained by watching an action of a spider, which I had never before observed. The insect (if I may be allowed the term) was stationed on the outer side of the window-frame, and appeared to be engaged in cleaning its spinnerets ; these organs were protruded, and the hinder pair of feet being joined together, the loop so formed was used by it as a brush. After three or four brushes the spider would move on a short distance, and then again joining its feet, repeat the manœuvre. I remarked that the claw of one leg always took hold of the opposite tarsus at some distance from the extremity. The species was not familiar to me ; it was of small size, with elongate abdomen, and variegated markings. Possibly this action may be familiar to those who are better acquainted with the habits of these Octopods.—*George Guyon ; Ventnor, Isle of Wight, November 14, 1851.*

Captures of Lepidoptera in the New Forest, Hampshire.—The following is a list of a few of the rarer insects I have captured in the New Forest during the last two years.

Pieris Cratægi	Sphinx Convolvuli	Enistis quadra
Nemeobius Lucina	Acherontia Atropos	Triphæna fimbria
Argynnis Aglaia	Sesia Bombyliformis	interjecta
A black variety of Argynnis Paphia	Notodonta Dromedarius	Apamea nictitans
Cynthia Cardui	Ziczac	Apatela leporina
Apatura Iris	Leiocampa dictæoides	Catocala promissa
Limenitis Sibylla	Stauropus Fagi	sponsa
Hipparchia Semele	Drymonia dodonea	Aeronycta Alni
Galathea	chaonia	tridens
	Peridea trepida	

—*Digby Compton ; Manor House, Lyndhurst, New Forest.*

Captures of Lepidoptera at Sutton Park, Warwickshire.—In addition to the more common Lepidoptera, the following have been taken here during the preceding season.

Achatia Piniperda, one, end of March, asleep on rails.

Echmia Haworthella, one, May 1.

Micropteryx Allionella, plentiful, beginning of June.

Chærocampa Porcellus, one, middle of June. Several others taken by the Birmingham collectors.

Crambus Margaritellus, abundant, beginning of July.

Acronycta Alni, one, larva, September 10.

Colias Edusa, one, in a clover-field, September 12.

Agrotis saucia, one, at sugar, October 23.

" " var. majuscula, one, at sugar, October 24.

—*Thomas M. Simkiss ; Oscott College, Birmingham, November 20, 1851.*

Search for Pupæ of Lepidoptera at the Roots of Trees.—*Pœcilocampa Populi.*—It may be interesting to some of the entomological readers of the 'Zoologist' to learn that I have this year succeeded in taking this uncommon insect, by digging for the pupa. I have, as yet, found it at the roots of ash only, not of poplar. It is difficult to detect, from lying nearly at the surface of the ground, among the roots of the grass, and the cocoon being earthy-coloured, renders it still more likely to escape notice. A very fine female made its appearance on the 26th of October, and was followed, two days after, by two males, and, on the 5th of November, by another female. I can recommend to entomologists the plan of searching for pupæ, during the winter months, at the roots of trees, under moss, bark, &c., as, irrespective of its being the only occupation which the season of the year will admit of, it often repays the careful searcher with many of the rarer kinds. Among many hundreds of pupæ taken by me in this way during the early months of the present year, the following may be mentioned as worthy of notice:—

Chærocampa porcellus	Clostera curtula	Tæniocampa Populeti
Sphinx Convolvuli	reclusa	miniosa
Smerinthus Tiliæ	Apamea unanimitis	Hadena saturata
Lithosia rubricollis	Trachea Piniperda	adusta
Phragmatobia mendica	Tæniocampa munda	Boarmia Abietaria (July)

—*Joseph Green ; Vicarage, Lower Guiting, Gloucestershire, November 13, 1851.*

Emmelesia Blomeri taken at Goblin Coombe, Somersetshire.—On the 22nd of July, last year, I took two specimens of *Emmelesia Blomeri*, whilst beating, in Goblin

Coombe, near Yatton, a favourite entomological locality of mine. I had hoped to have taken more there again this year, but although I went two or three times for that express purpose, I was disappointed. Goblin Coombe, in its general character, much resembles Castle Eden Dene, where Mr. Wailes took his specimens, being a rocky but well wooded ravine, formed in magnesian limestone. — *A. M. Norman; Christ Church, Oxford.*

Occurrence of Halias clorana at Fulham. — I had the good fortune, last July, in company with my friend Mr. Edwin Shepherd, to meet with the larvæ of the rare Tortrix, *Halias clorana*, in some numbers, feeding upon the osiers in our neighbourhood. Three of them came out on the 25th of August, but I have not had any since. On the same day I obtained a number of larvæ, so that I had the insect in all its stages in my breeding-cage at the same time, which I think is rather remarkable. I shall feel great pleasure in supplying those who have not met with it, either with the pupæ now, or the perfect insect in the spring. I also about the same time captured a number of specimens of *Tortrix transitana* and *Gelechia Atriplicella*. — *Augustus F. Sheppard; Bellefield House, Parson's Green, Fulham, November 20, 1851.*

Correction of an Error. — I have been informed by the Rev. J. F. Dawson, that the insect recorded by me (*Zool.* 3186), is not *Peryphus maritimus*, but *Tachypus pallidipennis*. I regret that the mistake should have occurred, but having no other book to guide me than Stephens's Manual, and finding the insect and description resembling each other, I was induced to call it by the former name. — *John Scott; London Works, Renfrew, October 13, 1851.*

Correction of an Error in a former Number. — In my notice of insects taken at Claydon (*Zool.* 3287), *Sesia Bombylififormis* should be *S. Fuciformis*. — *H. Harpur Crewe; Drayton Lodge, Tring.*

On the late appearance of Macroglossa Stellatarum. — I saw a specimen of this insect hovering over verbenas, about five in the afternoon of the 10th of October of this year. — *P. H. Newnham; Farnham, October 26, 1851.*

On the Occurrence of Heliothis dipsacea at Farnham. — My brother saw this insect in profusion on our heaths, on the 21st of June and a few following days. He did not then know what it was, but was with me on the 5th of July, when I captured a pair, which he recognized as the same insect. My specimens were much injured, and were the only ones I could find, their season being past. *Crambus Warringtonellus* appeared in the utmost profusion this year: I had only taken four specimens previously. — *Id.*

Proceedings of the Zoological Society.

Monthly General Meeting, December 4, 1851. — *W. J. Broderip, Esq., V.P.*, in the chair.

Messrs. *H. Druitt, W. H. Lintott, J. Colthurst, H. N. Reboul, and H. Bullock*, were elected Fellows.

Messrs. *A. B. Hope, M.P., J. Tomes, and J. D. Gordon*, were proposed as candidates for the Fellowship.

The Report of the Council stated that the total number of visitors to the Gardens during the current year amounted to upwards of 669,000. The additions made to the Menagerie, in consequence of the dispersion of the late President's collection at Knowsley, include 123 specimens of 62 species. Among them are five Elands (*Boselephus*

areas), which were bequeathed to the Society by the late Lord Derby, and eighteen other antelopes. The whole of these will have been removed from Knowsley to the Gardens by the beginning of next week, Lord Derby having with great kindness preserved them until the houses which have been expressly built for them were completed. Eighteen eagles and other rapacious birds, and twenty-four water-fowl of great rarity and beauty, have made a most remarkable addition to these branches of the collection. The most conspicuous species among these new water-fowl is the black-necked swan from Chili, of which the Society now possesses four examples. One other pair only exist in Europe, and are in the collection of Her Majesty at Buckingham Palace. The interest with which ornithologists will regard this fine bird, and the prospect of its reproduction here, can only be equalled by that which is created by a group of fifteen mandarin ducks, which have been principally bred in the Gardens, and are now in their fullest beauty. The Report of the Council also stated, that Mr. Gould has most liberally placed his collection of humming-birds at their disposal for twelve months, and it will consequently be thrown open to the visitors, as well as to the Fellows of the Society, during the whole of next season.—*D. W. M.*

Proceedings of the Entomological Society.

December 1st, 1851.—J. O. WESTWOOD, Esq., President, in the chair.

The following donations were announced, and thanks ordered to be given to the donors:—‘*Entomologische Zeitung*’ for October; by the Entomological Society of Stettin. ‘*The Zoologist*’ for December; by the Editor. ‘*The Literary Gazette*,’ three Nos. for November; by the Publishers. ‘*Annals of the Lyceum of Natural History of New York*,’ Vol. v. No. 3; by the Lyceum. ‘*Smithsonian Contributions to Knowledge*,’ Vol. ii., 1851. ‘*Proceedings of the American Association for the Advancement of Science*, fourth meeting, August, 1850. ‘*Fourth Annual Report of the Smithsonian Institution*.’ ‘*Ephemeris of Neptune for 1852*, by B. A. Gould, jun.’ ‘*Report to the Smithsonian Institution on the Discovery of Neptune*.’ ‘*Report to the Smithsonian Institution on the Public Libraries of the United States*, by Prof. C. C. Jowett,’ 1851. ‘*Patent Office Report*,’ 1848:—all presented by the Smithsonian Institution. ‘*Boston Journal of Natural History*,’ Vol. vi. No. 1 and 2, Boston, 1850: by the Boston Society of Natural History. ‘*Diptères Exotiques*,’ par J. Macquart, Suppl. Paris: 1847-8; by the Author. ‘*Analyse des Expériences sur la Muscardine et les autres Maladies des Vers à Soie en 1849*.’ ‘*Insectes nuisables aux Récoltes, moyens d’arriver à leur destruction*.’ ‘*Enumeration des Insectes qui consomment les Tabacs*.’ ‘*Extrait des Matériaux recueillis pendant la Campagne Séricicole de 1850, sur les Maladies des Vers à Soie*.’ ‘*Essai sur les Insectes utiles et nuisables*.’ All by M. Guérin Ménéville, and presented by him. ‘*Rapport sur les deux Essais sur les Maladies des Vers à Soie*, par M. Duméril;’ by M. G. Ménéville. ‘*Proceedings of the Royal Society*,’ Vol. vi. No. 80; by the Society. A box of British Lepidoptera, in very fine condition; by H. Doubleday, Esq.

There have also been purchased for the Library, ‘*Systematische Beschreibung Zweigelflügeligen Insekten*;’ by J. W. Meigen, Vol. vii.

G. Guyon, Esq., Richmond, and T. Dossetor, Esq., London, were elected Members of the Society; and James Dutton, Esq., Hammersmith, was elected a subscriber to the Society.

Mr. Douglas exhibited, on the part of H. Cooke, Esq., *Argynnis Lathonia* and *Diphthera Orion*, both captured near Hastings, and *Adela rufimetrella* from the same locality, taken among sallows in April.

Mr. Douglas reported that of the larvæ off *Origanum vulgare*, exhibited at a former meeting, one had arrived at the perfect state, and proved to be *Gelechia subocellea*, St.

Mr. Adam White read the following note, addressed to him by Mr. H. George, jun.

"Dear Sir,—Three weeks ago I was walking, one very dark evening, in the Brompton lanes, when I observed under a hedge a dozen or more luminous spots, about the size of a pin's head. Expecting that it might be some decayed animal, I cut a twig from the hedge, and gently stirred the ground, and to my astonishment, about half a dozen of these spots made apace towards me, while the rest retreated. Not having my collecting-bottle, I secured this movable mass in my handkerchief, where it remained luminous until I had thickly covered it to prevent any means of escape. When I arrived at home, to my further astonishment I discovered it to be no more than the common *Goërius olens*. It was no longer luminous: I did not immediately kill it, but waited to see whether it would show the same phosphoric appearance, but without any success. The causes of what I observed I leave for you to determine, and have submitted it to you, knowing how acceptable any information of the kind generally is.

"I remain, yours respectfully,

"HENRY GEORGE, JUN.

"4, Hornton Villas, Kensington,

"October 29, 1851."

Mr. Stephens suggested that the *Goërius* had been caught in the act of attacking or feeding on a *Scolopendra*, and that some particles of phosphorescence therefrom had adhered to it. Mr. Curtis concurred with this view, and added that the favourite food of this beetle was *Forficulæ*, a fact that might be turned to account by growers of Dahlias and other plants attacked by earwigs. The President mentioned as an instance of the predaceous character of this *Goërius*, that it had been known to attack a worm six times its own length. Mr. Smith said that he once, at night, disturbed a *Creophilus maxillosus*, which appeared luminous, the phosphorescence doubtless having originated in the decaying matter within an old crab-shell on which the beetle had been feeding.

Mr. White exhibited a spider brought by C. Ede, Esq., R.N., from the Arctic regions, lat. 76, long. 69. He observed that Otho Fabricius, in his '*Fauna Grœnlandica*,' has noticed only four species of *Aranea*, one of which, *A. saccata* (now *Lycosa saccata*) this specimen resembled, but he thought it not identical, and proposed to call it *L. Baffini*. Mr. White also exhibited *Tipula glomerata*, *Walker*, and a *Cheironomus*, both brought from the same locality as the spider; and observed that the eggs of these two Diptera being deposited upon the ground, exposed for many months to the most intense cold, and still preserving their vitality, was a wonderful instance of the power of life in insects. Judging from the variety of insects brought by various visitors to the Polar regions, he believed the number there to be much greater than is generally supposed. Mr. Curtis remarked that Sir James Ross had, as an experiment, caused a caterpillar to be frozen and thawed several times without injuring its vitality.

The Secretary read the following extracts of a letter from Mr. H. W. Newman:—

"I have to trouble the Society again with a few observations in reply to Mr. Smith's remarks, (Proceed. 110). First of all, Mr. Smith mistakes entirely about the limited number of the species. My paper was only an extract. I mention my selection of

four for examples, being the most common. I know at least ten species which make honey. Mr. Kirby enumerates nearly one hundred of the wild bees in his work.

"2. The *Apis Derhamellus* I am unacquainted with by name, but from description I presume it is a black bee, like *A. lapidaria*.

"3. In the numerous nests which I took for seven or eight summers, I always selected those which had at least two-thirds of their combs *in brood*, generally before the males were hatched. In all cases, when the males were hatched they left the nest and never returned; those which escaped during the digging out of my numerous nests, never came back to the place like the workers.

"I mentioned the case of the nest in my own garden this year: now Mr. Walcott, who mentioned the nest on Durdham Down this year, says that in the *third week in August* he saw males entering the nest! This is still more extraordinary, as in all my long experience of fifty years, I never saw nests of *Bombus Derhamellus*. Long before this, in my nest of *B. lapidarius*, the males were all gone and over, the queens looking out for holes to stop in. In 1850, the males in all the nests here, a hilly and late country, were all out and gone by the middle of August, and many of them much sooner, it being a fine summer.

"I had nests within a hundred yards of my house, when I lived at Thornbury Park, of the *Apis terrestris*, *A. hortorum*, and *A. muscorum*; these nests I visited nearly every day in July and August, and no males ever entered.

"By the *last week in August* this year, the development of all the bees had taken place, and the purposes of their existence accomplished.

"Lastly, the pastime of the drones is much more easily shown than the other questions, and in any fine day, towards the end of July, it may be observed between the hours of 10 and 3 o'clock. I grant that the sun and wind have a good deal to do with the movements of all insects. I trust next summer to have the pleasure of meeting Mr. Smith and Mr. Walcott 'at Philippi' to settle the argument.

"Now respecting Mr. Smith's remark about the *Apis lapidaria*, I will assure him that there is one, if not two, species of wild bees in the West of England, which do not inhabit Clydesdale, which is a most prolific field for *A. terrestris*. One species of *A. lapidaria*, with a yellow band and a *brown red* abdomen, is most common, and universally has its nest in walls.

"Mr. Smith also mistakes my observation about the organ of locality in the drones. I merely contend that as far as their nest is concerned, the males leave it without the least observation, and are never intended to return, like the workers, which act entirely differently. When the males become vagabonds, they then commence the round of visits described by me until they perish."

The President read a portion of his Report on the Entomological Productions in the Great Exhibition, showing from the examples therein how much society was indebted to insect labours.

The Secretary read some extracts of a letter from Mr. H. W. Bates, dated Pará, October 8, in which he stated his intention of going into the interior for the purpose of exploring a branch of the Amazon not yet visited by any naturalist.

Part 7, Vol. i., n. s., of the Society's 'Transactions' was announced to be ready.

The Secretary called the attention of the meeting to 'A Memoir on the Pselaphidæ of the United States, by J. L. Le Conte, M.D.' in 'The Boston Journal of Natural History,' Vol. vi. No. 1, 1850.—*J. W. D.*

Proceedings of the Microscopical Society of London.

November 26, 1851.—Dr. A. FARRE, President, in the chair.

Dr. Carpenter detailed the results of some observations made by Mr. Williamson, of Manchester, on *Volvox globator*. He stated, that, startling as the assertion might at first sight appear, Mr. Williamson had come to the conclusion that the *Volvox* belongs not to the animal, but to the vegetable kingdom; and that he himself, having gone over the evidence, was inclined to concur in this view. The increase of the cells (from the supposed ova) being carried on in a manner precisely analogous to that of undeniable *Algæ*; while many of the so-called polygastric animalcules of Ehrenberg having been proved zoospores of some of the *Convolvæ*, renders the supposition probable. It appears, from Mr. Williamson's observations, that between the outer integument and the primordial cell-wall of each cell, a hyaline substance is secreted, causing the outer integument to expand; and as the primordial cell-wall is attached to it at various points, it causes the internal colouring matter, or endochrome, to assume a stellate form, the points of one cell being in contact with those of the neighbouring cell; these points forming, at a future period, the lines of communication between the green spots so often noticed on the adult *Volvox*. Dr. Carpenter argued that the evident automatic action of vibratile cilia was also in favour of the vegetable theory; and cited a case in which a cistern that had been recently cleared out, and partially filled by the rain only, had become suddenly and rapidly covered with a bright green scum, which on examination proved to be the *Cryptomonas* of Ehrenberg. The water could have contained nothing in solution, with the exception of perhaps a little carbon; and Dr. Carpenter thought that the distinction between the animal and vegetable kingdoms could be better defined by having regard to the *nutriment* than by any other mode,—animals requiring *organized* matter for food, while vegetables flourish on inorganic matter, or else organic matter in a *state of decomposition*.

Mr. Bowerbank rose, not to oppose Dr. Carpenter's view, but to ask some questions in order to elicit further information. Was it an established fact that there were cilia, or was their presence merely inferred from the motion? Was there any discharge of the contents of the primordial cell,—and if so, was the contraction sudden or gradual? He had witnessed a similar appearance in the early cells of some of the ferns, in which it was assumed in consequence of the sudden ejection of the contents,—and he appealed to Mr. Deane, who had paid much attention to the development of the ferns in the earliest stages.

Mr. Deane stated that he conceived Mr. Bowerbank had misapprehended Dr. Carpenter's statement; as the stellate appearance in the cells of the *Volvox* was owing to the *dilatation* of the outer integument in consequence of the formation of hyaline substance, while the appearance in the ferns was owing to the *contraction* of the inner membrane. There was no doubt of the existence of cilia in the mature *Volvox*.

Mr. Shadbolt could speak distinctly as to the presence of cilia in the *Volvox*; although difficult to see while the creature was in motion, they could be readily observed by confining it, and still more so by compressing and rupturing the sphere, by which means, at the torn edges, they could even be counted. He was not yet prepared to coincide with the vegetable view; and reminded Dr. Carpenter that the automatic nature of the movements could not be considered as any argument in favour of a vegetable theory, as it was precisely analogous to the automatic retraction of the tentacula in the *Bryozoa*. His chief objection, however, was, that the *Volvox* presented

a most anomalous appearance when viewed as a *perfect plant*,— while the idea of its being a sporangium could scarcely be maintained, when precisely similar individuals were formed by a species of reproduction. He believed no instance was known of a seed producing a seed.

Dr. Carpenter replied that certainly in the mosses an increase in the seeds was produced by gemmation,— and this might be looked on as a somewhat similar case.
—J. W.

Proceedings of the Royal Physical Society of Edinburgh.

The usual monthly meeting of this Society was held at 6, York Place, on the evening of Wednesday, December 3, Dr. COLDSTREAM in the chair, when there was a full attendance of members and visitors. The following gentlemen were unanimously elected office-bearers for the current session :—

Presidents.—John Goodsir, Esq., Professor of Anatomy, University, Edinburgh; John Coldstream, Esq., M.D., F.R.C.P.; and Hugh Miller, Esq.

Council.—Hamlin W. Lee, Esq.; Rev. John Fleming, D.D.; James Cunningham, Esq., W.S.; Robert K. Greville, LL.D.; Robert Chambers, Esq.; and William H. Lowe, Esq., M.D.

Treasurer.—William Oliphant, Esq.

Secretary.—Wyville T. C. Thomson, Esq.

Assistant Secretary.—George Lawson, Esq.

Honorary Librarian.—Robert F. Logan, Esq.

It was remitted to the Council to forward to H. R. H. Prince Albert, a congratulatory Address upon the success of his labour in connexion with the Great Exhibition; and also to memorialize the Treasury upon the importance of forming in Edinburgh a Museum of the Geology and Natural History of Scotland.

The following communications were then brought forward :—

1. Dr. J. A. Smith read a notice of the occurrence of the black tern near Coldstream, and exhibited a specimen of this bird shot in the beginning of July last. It was killed when flying in company with several others, apparently of the same species, in pursuit of its insect prey, on the banks of the Tweed. Dr. Smith believed the specimen before the Society to be an adult bird, though from the dulness of its colouring, when compared with others which he had examined from the South of England, he was led to the conclusion that it had only lately assumed its adult plumage. Like the other terns, *Sterna nigra* is a summer British visitor, but, unlike them, it frequents rivers, ponds and marshes, in preference to the sea-coast, breeding amongst the grass and rushes of their borders. This bird is mentioned by Yarrell, Jardine, and M'Gillivray, as not having been met with in Scotland; and as this individual had pursued its prey to the northern bank of our boundary river, Dr. Smith considered it the first Scotch specimen. Mr. Archibald Hepburn, however, who was present, stated that some years ago an individual had been shot in East Lothian.

2. Mr. Evans exhibited to the Society a beautiful specimen of the Bohemian wax-wing, lately captured by him in the Experimental Gardens; and a specimen of the night-jar, shot in Hopetoun woods.

3. Mr. R. F. Logan presented the Report of the Entomological Committee on the order Lepidoptera, and said that he had hoped it would have been undertaken this season by Dr. Lowe; and it was only at his request, in consequence of absence from home, and professional engagements at the height of the season, that he had been induced to enter upon the subject. He then proceeded briefly to detail the results of the various excursions undertaken by the Committee during the season, for the purposes of investigation, and mentioned that many insects had been found, which were probably additions to the Fauna of Scotland, — several probably undescribed species; and that the Committee had this year added twelve species to the list of Edinburghshire Lepidoptera, viz., — *Amphysa prodromana*, *Gracilaria auroguttella*, *Roeslerstammia pygmaea*, *Argyresthia arceuthina*, *Gelechia Cirsella*, *G. longicornis*, *Ornix torquilella*? *Nemotois* — ? *Argyresthia dilectella*, *Depressaria conterminella*, *Elachista* — ? *Exapate gelatella*. Specimens of these, and of a variety of other species captured during the past season, were exhibited by Mr. Logan, who was highly complimented by the entomologists present for the beautiful manner in which they were set and preserved. It was mentioned that the use of chloroform is the best and easiest method of killing insects, as it at once deprives them of life without in the slightest degree injuring them.

4. Mr. Rhind exhibited a drawing of a fossil animal lately found in the upper beds of the old red sandstone in Morayshire, by Patrick Duff, Esq. The skeleton is that of a vertebrated animal, and, including the upper portion of the tail, measures about five inches in length. The head exhibits teeth in both jaws; there are four legs. The first six ribs have the usual curved form of the thorax of an air-breathing animal; the next six or seven false ribs extend outwards in a horizontal position; the whole structure of the skeleton bearing a resemblance to that of the *Draco volans*, or flying lizard of the East Indies. It is to be hoped that a more particular description of this singular fossil will be given to the public by its possessor.

5. Mr. Rhind then brought before the notice of the Society, a collection of zoophytes from the Frith of Tay, near the village of Newport, chiefly with a view of pointing out a locality not hitherto much explored by collectors. Five species of *Sertularia* were exhibited, also *Plumularia falcata*? *Gemellaria loriculata*, &c.; fine specimens of *Laomedea dichotoma*, and specimens of *L. gelatinosa*, from eight to ten inches in length. A muddy bottom, and a considerable proportion of fresh water from the flow of the river, were supposed to have influenced the forms of some of the zoophytes exhibited.

6. Mr. Alexander Bryson exhibited a suite of fine zoolitic minerals from the Bay of Fundy, Nova Scotia, collected by Professor Chipman, of Acadia College. The series comprised Chabasie, Heulandite, Stilbite, Analcime, Mesotype, Apophyllite, and Dysclasite. The crystals of Chabasie are peculiarly interesting, some being hollow, showing that, instead of crystallizing around a central nucleus, the external surfaces were first deposited. Mr. Bryson referred to similar examples occurring in garnet, Iceland spar, &c. The foot-prints of the sandpiper, from the Bay of Fundy, were also exhibited.

The Society then adjourned till the first Wednesday of January.—R. F. L.

Proceedings of the Society of British Entomologists.

November 5, 1851.—Mr. HARDING, President, in the chair.

The Secretary announced the receipt of a letter from Mr. Shield, in which he stated that he had met with the larvæ of some small Lepidoptera which were new to him. He was at present in the neighbourhood of Clonmel.

The President remarked that the time of the year had arrived in which it could not be expected that many novelties would be exhibited, it would therefore be as well if any of the members would record any little fact they might have observed in connexion with the habits of insects. He would remark that the economy of both bees and ants had been closely observed, but that another very interesting class of insects had been very much neglected,—he meant spiders. He would mention the tact and instinct he had observed in one of them. In his travels round the coast during the last summer, he was somewhat amused by observing the manners of a spider, the species of which he did not know. As soon as a flower of a thistle, or of the black knapweed, was fully expanded, a flat crab-shaped spider, of a cream or dirty white colour, took its place in the centre of a blossom, watching as a cat does for its prey. These spiders make no web, but lie in wait until some unfortunate butterfly or moth makes its appearance, perhaps a marbled white (*Hipparchia Galathea*), or a scarlet tiger (*Calimorpha dominula*), or a blue Polyommatus, all of which abound in this locality. As soon as one of these alights on a flower, it is instantly seized by the legs or any other part that comes ready to the claws of this formidable enemy. The spider immediately throws out its web over every part of the poor captive, until it is bound tight to the flower; it then leisurely partakes of its meal with a gusto that shows it is duly relished. After the contents of the body are disposed of, the spider leaves the wings of its prey bound to the flower, where they may be observed for days; it then quits that flower for ever, its instinct teaching it that to remain would be starvation, as no insect would settle on a flower covered with the mangled remains of another, which, under ordinary circumstances, continue on the flower until it perishes. The President stated that these were some of the observations he had made on the habits of one of our British spiders; and he had no doubt, if other species were observed, that many other interesting facts in their habits would be discovered.—*J. F. N.*

A beautiful Discovery in the Management of Bees.—It has hitherto been regarded as a well-established fact that bees require the light to be carefully excluded from their habitations. L. L. Langstroth, of Chesnut-street, a native of this city, and a gentleman of equal worth and accomplishment, who has been engaged for many years in the scientific investigation of their habits, has most conclusively proved that this is not the case. The various glass observing hives, which have been used by ingenious naturalists, have always been furnished with shutters, to be opened only when the hives are inspected. Such a sudden admission of light exerts a disturbing influence upon the bees. Mr. Langstroth has hives of his own invention, in which the bees are exposed to the *full light of day*, so that all their beautiful works are as easily examined as the articles in a shop-keeper's window. They do not manifest the slightest dislike to such a perfect flood of light. It is obvious that this unexpected discovery must greatly facilitate a thorough knowledge of the habits of this wonderful insect; as the

queen is almost constantly in sight, and all the mysteries of the hive are unfolded in the most ample manner to the lover of Nature. We know that Mr. Langstroth has been repeatedly consulted respecting the best means of ventilating public rooms; and we strongly suspect him of having stolen some of his ideas from the admirable principles on which bees ventilate their hives. We wish he could persuade the community that their public and private buildings ought to be at least as well ventilated as the humble dwelling of the bee, and thus aid in effecting a revolution, the importance of which to the public health cannot be over estimated.—*N. American and U. S. Gazette.*

Entomological Localities. By J. W. DOUGLAS, Esq.

(Continued from page 3248).

BOX HILL, SURREY, AND ITS VICINITY.

"Hunc circum innumeræ gentes populi que volabant,
Ac veluti in pratis, ubi apes æstate serena
Floribus insidunt variis, et candida circum
Lilia funduntur : strepit omnis murmure campus."

Virgil.—Æneid.

When summer's sun with fervent heat
Drives sheep and shepherds for retreat
To thickest shades, remember then
To leave the haunts of busy men,
Who, over-anxious, lose their prime—
Their *now*—in cares for future time :
Go, put yourself behind a horse
Of iron, that with centred force
Of fifty ordinary steeds,
Shall run in no time where the meads
Bedeck'd with every floral charm
Afford a restorative balm
To weary minds ; and shade of trees
Invites to lie at full-length ease.

Adopted and adapted from Horace.

SOME fine morning in June, July, or August — it matters not which — get into a South-eastern train, with a ticket for Boxhill station, and whether you be entomologist, botanist, or neither, you will not regret spending the time or money required. And if you be a man of social sympathies, one who

—— "Feels how the best charms of Nature improve,
When we see them reflected by looks that we love,"

go not alone, but take with you at least one friend who can appreciate

some of the most beautiful scenery to be found within twenty miles of London.

At Reigate you leave the main line, and take the Reading branch, which runs through a most delightful country: on the left, open and undulating; on the right, with a range of chalk hills extending even to your destination. At this point, on your left is Deepdene with its woods, close to the town of Dorking; on your right is Norbury Park and Boxhill, in which direction I propose to lead you. The slope of Boxhill produces many insects, and a dense grove of aged box trees at its top affords a welcome shade to those who climb to it, and whence a most charming prospect opens. About a mile from Boxhill a lane leads to Headley, running along a valley; on the left, a range of chalk heights is clothed with a thick wood of beech and fir, which gradually becomes more open as you advance, and then, for a mile, there is

————— “a bank whereon the wild thyme blows,
Where oxlips and the nodding violet grows;”

in fact the ground is literally covered with an infinite variety of plants, including many species of Orchideæ, and is the most prolific locality in insects I ever saw. Just opposite a farm, a foot-path is cut on the slope of the hill, and leads to “the hilly field,” — the *Ultima Thule* of my explorations, for I have always met with so many rarities in it that I have had no opportunity of searching further. Looking back ere this spot is reached, the scene, though confined, is of unmingled beauty; and when the setting sun, throwing its light on one side of the valley, puts the other into shade, the panorama is glorious. Having ascended the hilly field you arrive at Mickleham Downs, which are mostly covered with juniper-bushes mingled with old yews, and hence the slopes of Norbury appear to great advantage. It is said that Windsor Castle may be seen on the left; it is certain that on the right a constant cloud-canopy marks the locality of the great Babel.

Following the descent of the down, close to the fence of a plantation, you will arrive at a grove of firs, through which a path, continuing to and through the church-yard of Mickleham, will bring you out opposite the “Running Horse,” a right good inn, where you may assuage the wants that *will* attend on the most ethereal pleasures. If the time of day will suit such a repast, you cannot do better than order tea and broiled ham, for the latter of which the house is famous; and after discussing them you will be equal to anything.

Norbury Park, with its beautiful plantations, is close to the village of Mickleham; and, until it recently passed into the hands of a new owner, was free for all to roam in at will, but now it is *tabooed*. "Trespassers will be prosecuted" meets the eye in all directions; and it is as difficult to catch an insect as a hare within its sacred precincts. Here, in 1833, Mr. Walton rediscovered *Dasycampa rubiginea*, feeding at night on the berries of the noble old yew-trees which grace the slopes, (Ent. Mag. ii. 207); and though many collectors have followed him, it still remains one of our rarest moths. Glorious days have I spent in this locality, often in company with my lamented friend, Edward Doubleday, whose early death Entomology has so much to deplore; and many a time, seated on the verdant turf, under a wide-spreading tree, have his varied knowledge and classic lore shed a new charm over the beautiful scenes around. One of his numerous ready quotations I have put at the head of this article. Thinking of these times, I am reminded of the words of Shelley:—

" It was the azure time of June,
When the skies are deep in the stainless noon,
And the warm and fitful breezes shake
The fresh green leaves of the hedge-row briar,
And there were odours there to make
The very breath we did respire
A liquid element, whereon
Our spirits, like delighted things
That walk the air on subtle wings,
Floated and mingled far away."

Beyond Norbury Park is Fetcham Down, a fine open spot surrounded by plantations. Here are several large birch-trees, upon which, in October, the larvæ of *Pheosia Dictæoides* and *Ennomos illustraria* feed.

When collecting in this neighbourhood I have at times visited Leatherhead Common, situate about four miles from Mickleham, on the road to Kingston. The soil is clay, and the surface is covered with old pollard oaks, and a straggling growth of whitethorns and brambles. Some of the captures here are noted below.

The following Lepidoptera have occurred in this locality.

Argynnis Lathonia. August 20, 1834 (Ent. Mag. iii. 416), in the hilly field, Headley Lane.

Lithosia complana. Headley Lane; July.

„ *helvola*. Yew-trees, Boxhill; June.

„ *aureola*. Beech-trees, Mickleham Downs; June.

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- Setina irrorella*. Flying, Headley Lane ; June, July.
- Platypteryx lacertula* and *unguicula*. Larvæ in September, upon beech, Fetcham Down.
- Stauropus Fagi*. Trunks of trees, Norbury plantations ; June.
- Petasia cassinea*. Trunks of trees, Norbury Park ; October.
- Acronycta Alni*. Larva on hazel ; August 11, (Zool. 1140).
- Ceropacha ridens* and *Cymatophora Oo*. Larvæ on oaks, Leatherhead Common ; June.
- Noctua leucographa*. Near Leith Hill, on sallow-flowers ; April.
- Xanthia aurago*. Ivy-bloom and at sugar ; September and October.
- Dasycampa rubiginea*. Ivy-bloom and at sugar ; October.
- Dianthæcia conspersa*. Trunks of trees ; June.
- „ *Carpophaga*. Feeding at flowers of *Silene inflata* &c. ; June.
- Xylina semibrunnea*. Ivy-bloom and at sugar ; October.
- Calocampa vetusta*. At sugar ; September.
- Toxocampa pastinum*. Bushes on Mickleham Downs ; June.
- Catocala promissa*. Larvæ on oaks, Leatherhead Common ; June.
- Aventia flexula*. Yew-trees at the foot of Boxhill ; June.
- Aspilates gilvaria*. Headley Lane ; August
- Boarmia Abietaria*. Mickleham Downs ; June, July.
- Thera Juniperata*. Abundant in junipers, on Mickleham Downs, (Zool. 94) ; October, November.
- Anticlea sinuata*. By beating ; July.
- Harpalyce Psitticata*. Ivy-bloom ; October.
- Emmelesia bifasciata*. Slope of Boxhill ; July 27.
- Ephyra orbicularia*. Headley Lane ; June.
- Eupithecia piperata*. Hilly field ; June.
- Dosithea ornata*. Hilly field ; end of May and in August.
- Pyrausta cingulata* and *P. anguinalis*. Headley Lane ; June and August.
- Cledeobia angustalis* and *Botys hyalinalis*. Headley Lane, &c. ; July.
- Hypena crassalis*. Leith Hill, among *Vaccinium Myrtillus*.
- Sarothripus Rewayana*. Yew-berries ; October.
- Tortrix cinnamomeana*. In beech-trees ; June.
- „ *semialbana*. Hilly field ; July.
- Peronea cristana*. Fetcham Down and Leatherhead Common, in blackthorn and whitethorn hedges ; October. Does any one yet know on what the larvæ feed ?
- „ *umbrana*. Same time and places as *P. cristana*.

Peronea aspersana. The larva feeds upon *Spiræa Filipendula*, in June; abundant in the hilly field, &c.

Penthina sauciana. Near Leith Hill, on *Vaccinium*; June?

„ *Sellana*. Hilly field; June and July.

Sericoris cespitana and *S. conchana*. Hilly field; July.

„ *decrepitana*. Mickleham Downs, on Scotch firs; June.

Mixodia Ratzburghiana. Mickleham Downs, on larches; June and July.

Sciaphila sinuana. By beating; July.

Ephippiphora trigeminana. Hilly field; July.

Olindia ulmana. Damp lane leading to Leith Hill; July.

Semasia rufillana. Hilly field; August.

Coccyx nanana. Headley Lane, on spruce firs; June.

Carpocapsa grossana. Beech trees; June, July.

Stigmonota coniferana. Once on spruce fir; June.

„ *Weirana*. Flying about beech trees; June.

Dicrorampha acuminatana, *Z.* Headley Lane, flying near the ground; August.

Catoptria cæcimaculana. Hilly field; July.

Eupæcilia Carduana, *Z.* Ditto.

Pempelia carnella. Boxhill; July.

„ *ornatella*. Hilly field; July, August.

Tinea luzella. In a house at West Humble; June.

„ *angusticostella*. Hilly field; July.

Plutella cultrella. Hedges; October.

Cecophora flavifrontella. In privet-bushes; June.

„ *senescens*. Headley Lane; August.

Depressaria rotundella. At sugar; September.

„ *Douglasella*. Beaten out of whitethorn; August.

Gelechia alacella. Once beaten out of an oak at Leatherhead Common, in the autumn.

„ *sequax*. Out of bushes, Headley Lane; July.

„ *tæniolella*. Hilly field, by sweeping; July.

„ *Coronillella*. Ditto; June.

„ *bifractella*. Ditto; August.

„ *subocellea*. On *Origanum vulgare*; July.

„ *Metzneriella*. Hilly field, by sweeping; July.

„ *neuropterella*. Ditto; August.

Echmia equitella. On *Sedum acre*? June.

Argyresthia abdominalis. In juniper-bushes; June.

„ *semitestacella*. Beech trees; August.

- Argyresthia dilectella*. In juniper-bushes ; July.
 „ *arceuthina*. In ditto ; June.
 „ *præcocella*. In ditto ; June.
 „ *aurulentella*. In ditto ; July.
 „ *Sorbiella*. On *Sorbus Aria* ; June.
Coleophora Onosmella. On *Echium vulgare* ; June.
 „ *conspicuellæ*. Headley Lane ; July 12.
 „ *discordella* and *saturatella*. Mickleham Downs ; July.
Zelleria insignipennella. Headley Lane. August.
Gracillaria semifascia. Yew-trees, Headley Lane ; August.
 „ *Ononidis*. By sweeping, in the hilly field ; August.
 „ *ocnerostomella*. On *Echium vulgare* ; June.
Elachista Gangabella. Bushes, Headley Lane ; June.
 „ *magnificella*, *Z.* Hilly field ; July and August.
Lithocolletis elatella. Bred in September from leaves of *Viburnum Lantana*.
Pterophorus Pilosellæ. Hilly field ; August.
 „ *Baliodactylus*. Ditto ; July.
 „ *tetradactylus*. Ditto ; June.
 On account of the length to which this paper has extended, I have had to omit many interesting species. At some future day I hope to add some novelties to the list of *Lepidoptera* known in this locality, and beg the assistance of my brothers of the net.
 This neighbourhood is rich in other orders besides *Lepidoptera*. In *Coleoptera* I may mention *Leptinus testaceus* (Zool. 2277), and *Claviger foveolatus* (Zool. 200, 266).
 J. W. DOUGLAS.
 2, Eton Grove, Lee, Kent,
 December 11, 1851.

A List of Butterflies occurring in the Neighbourhood of Polebrook, in the County of Northampton ; with some Remarks. By the Rev. WILLIAM BREE, M.A.

I AM not acquainted with any locality which affords so many of our rare and less common butterflies, as this somewhat remote corner of North Hants. Within a circuit of five miles from this place, I have myself observed and captured specimens of all mentioned in the sub-joined list. Barnwell and Ashton Wolds are particularly favourite

spots; these are large woods of oak and ash, with broad grassy ridings, and underwood of the most impenetrable blackthorn, intermixed with stools of the broad-leaved willow (*Salix caprea*), and adjoined by some large and only partially cultivated fields of coarse grass, thymy hillocks, &c. &c.; in short, as inviting looking spots as an entomologist could well desire. Here, in the space of one week, in the month of July, I have captured specimens of *Apatura Iris*, *Polyommatus Arion*, *Thecla Pruni*, *T. W-album*, *Argynnis Paphia*, *A. Aglaia*, *Pieris Cratægi*, *Hipparchia Galathea*. Early in the morning, and on damp gleamy days, I have several times seen, to the greatest advantage, as I conceive, the most splendid of all our British flies, *Apatura Iris*, sailing along the ridings, and settling upon the ruts and other moist and muddy spots, often assailed by the impudent attacks of *Hipparchia Janira* and *Galathea*, which appear to be the foremost in attacking him, when he thus condescends to leave for a while his lofty oak, to visit the regions of his less honourable kindred.

The partiality which this insect exhibits for individual sprigs of particular trees, has often been remarked upon by entomologists, and is certainly confirmed by the emperors of this neighbourhood. And it should almost seem as if this partiality were, if I may use the expression, *hereditary*: for upon a certain sprig of a small ash tree, by the side of one of the ridings in Barnwell Wold, I have each year since 1847, succeeded in capturing the purple emperor; and in all instances, upon the capture of one, the same identical sprig has in the course of a few days, if not within a few hours, been invariably occupied by another emperor.

Argynnis Aglaia, which, some years since, was plentiful here, has now almost, I may say entirely disappeared: not one single specimen did I meet with last year, and only one in the year 1850. *Thecla Pruni* is very uncertain in its appearance: in 1837 it literally swarmed in Barnwell and Ashton Wolds; I do not scruple to say that it would have been possible to capture some hundreds of them, had one been so disposed: for the last few years it has appeared but very sparingly indeed. *Thecla Betulæ* I never observed till this last September, and then by no means plentifully, although I have repeatedly looked for it every year since my residence in this county in 1847, thinking our wolds most particularly favourable-looking spots.

A flight of *Hesperia Comma* also appeared for the first time, to me, at least, last year; and certainly most unexpectedly, as I have always hitherto considered *H. Comma* as one of those insects peculiar to chalky soils, of which, so far as I know, we have none in this neigh-

bourhood. Solitary examples of insects away from their native soil, have occasionally occurred I believe in most counties.

In September last, while partridge-shooting in a field of standing barley, near to Biggin Hall, I observed a single specimen of *Colias Edusa*. Two coveys of birds were marked down in the barley, and immediately over them the *Edusa* was slowly and majestically taking its flight. Had I not been in company with other sportsmen, comparative strangers to me, I believe my entomological propensities would have gained the ascendancy over my sporting ones; for I certainly felt a very strong inclination to hand over my gun to the keeper, and spring the coveys for the chance of capturing the fly: however, as matters stood, the partridges were to suffer, and so the *Edusa* escaped.

The great prize of all the butterflies of our neighbourhood, however, I hold to be *Polyommatus Arion*, which, if I mistake not, was first discovered here by myself some thirteen or fourteen years since. It is confined entirely, so far as my experience goes, to Barnwell Wold, and the adjoining rough fields, with the exception of a single specimen, which I once met with in a rough field near Polebrook. Its flight is somewhat peculiar, being different from that of others of the same genus, and more resembling that of *Hipparchia Pamphilus* and *Tithonus*. Independently of its manner of flight and size, it is in most instances easily distinguished on the wing from the other blues, by its dark and irony appearance. Many entomologists have of late years visited Barnwell Wold in search of *Arion*; in short, a summer never passes without meeting in my rambles with brother entomologists from distant parts of the country; I rejoice, however, to be able to state that its annual occurrence does not appear to be diminished in consequence. Unless my memory fails me, I think Mr. Wolley, of Trinity College, Cambridge, informed me that he one year captured in a few days between fifty and sixty specimens, in and about Barnwell Wold, though, in point of weather, the days were anything but favourable.

I may perhaps as well add, that I have heard of *Papilio Machaon* having been seen here; and it is by no means improbable, from our vicinity to the fens of Whittlesea Mere, now, alas! no more: a flight of six or seven miles would easily cover the distance.

Two specimens of *Argynnis Lathonia* are reported to have been seen or taken in Ashton Wold; and a few of *L. Camilla* in the woods near Benefield: for the authenticity of these, however, I am not able to vouch.

LIST.

- Gonepteryx Rhamni*. Common ; spring and autumn.
Colias Edusa. One specimen at Biggin ; September, 1851.
Pieris Cratægi. Not common ; fields near Barnwell Wold ; June.
 „ *Brassicæ*, *P. Rapæ*, *P. Napi*, and *P. Cardamines*. Common.
Leucophasia Sinapis. Not common ; Barnwell Wold ; May.
Melitæa Euphrosyne. Common ; Barnwell and Ashton Wolds ; May.
 „ *Silene*. Not common ; Barnwell Wold ; May.
 „ *Artemis*. Not uncommon in some years ; Barnwell Wold, May.
Nemeobius Lucina. Not uncommon ; Barnwell and Ashton Wolds, and Bull-nose Coppice ; May.
Argynnis Paphia. Common in all woods ; May.
 „ *Aglaia*. Common in former years, now rare ; Barnwell Wold ; July.
 „ *Adippe*. Rare ; Benefield Woods ; June and July.
Cynthia Cardui. Very common in some years ; clover-fields and road-sides ; August and September.
Vanessa Atalanta. Common ; Ashton Wold and in gardens ; September.
 „ *Io*. Common ; spring and autumn.
 „ *Polychloros*. Not common ; Ashton Wold and road-sides ; spring and autumn.
 „ *Urticæ*. Common.
 „ *C-album*. Common ; Ashton and Barnwell Wolds ; spring and autumn.
Apatura Iris. Not uncommon ; Barnwell and Ashton Wolds ; July and August.
Hipparchia Hyperanthus. Common in woods ; June and July.
 „ *Galathea*. Plentiful ; Barnwell and Ashton Wolds ; July.
 „ *Pamphilus*, *H. Megæra*, *H. Ægeria*, *H. Janira*, and *H. Tithonus*. Common.
Thecla Betula. Rare ; Barnwell Wold ; August.
 „ *Pruni*. Very plentiful in some years, rare in others ; Barnwell and Ashton Wolds ; July.
 „ *W-album*. Rare ; Barnwell Wold ; July.
 „ *Quercûs*. Common ; Barnwell and Ashton Wolds, and Oundle Wood ; July.

Thecla Rubi. Not uncommon; Barnwell and Ashton Wolds; May.
Lycæna Phlæas. Common.

Polyommatus Arion. Not uncommon; Barnwell Wold and fields adjoining; July.

„ *Alexis*. Common.

„ *Idas*. Not common; Barnwell Wold; August.

„ *Argiolus*. Not common; Barnwell and Ashton Wolds; May.

Hesperia Comma. Rare; rough field adjoining Bull-nose Cop-pice; August.

„ *Sylvanus*. Common; Barnwell and Ashton Wolds, and rough fields; June and July.

„ *Paniscus*. Not uncommon; Barnwell and Ashton Wolds; May.

„ *Linea*. Common; Barnwell and Ashton Wolds; July and August.

„ *Tages* and *H. Alveolus*. Common; ditto; May.

WILLIAM BREE.

Polebrook, near Oundle, Northamptonshire,
 January 7, 1852.

*Extracts from the Correspondence of Mr. H. W. Bates, now forming
 Entomological Collections in South America.*

(Continued from page 3324).

Parà, October 29, 1851.

I now send of *Lepidoptera*, 452; *Libellulæ*, 20; *Coleoptera*, 49; other orders, 38; private *Lepidoptera*, 82; in all, 641, in one box. One bottle with three snakes and one lizard; seven fossil shells; three specimens of *Mammalia*; and one parcel in canvas of Indian weapons. The above I have managed to get together by very laborious work during the delays of the vessel in which I have engaged a passage to Santarem. After a most sickening putting off of the day of sailing, the owner now assures me most positively that we go the day after tomorrow; meantime I have arranged everything requisite for most effectually working the river Tapajos and other parts, for two or three years; and I don't intend to miss many fine things for want of apparatus, &c., as I did in the last trip. My late stay in Parà was much against my plans, but not my own fault, as the vessel was to have sailed a month ago; but I think I have employed the time most pro-

fitably since the 8th instant, when I packed off everything by the "Windsor." I have taken 260 not common species, of which about 35 species appear quite new to me. I think they will reach you in excellent condition, as I have taken every possible precaution; they leave my hands in a beautiful state. I only wish you were here to see them. The rarer Erycinidæ and Theclæ you may be assured, when good, are well worth a very high price, as after three years' collecting I still find them excessively rare; their value will increase in Europe when all the countries are well explored, and their excessive rarity well ascertained.

I received your usual welcome letter by the "Aive," acknowledging the receipt of my last Ega collection; I now regret not having worked the Ega district better, but under the circumstances in which I was placed, I could do no more. I wrote you at length per "Windsor," sending you a good collection, with a paper for Mr. Newman; and some sheets of notes of the Diurnes sent then, I wished you to hand to Mr. Hewitson, for arrangement and publication, with his remarks, descriptions of new species, &c. I should be happy to assist Mr. H. with information of habits, &c.

The yellow fever is still bad here: this week all the crew of a Hamburg vessel in port died one by one, — the captain, two mates, cook and men: worse than Africa! My health, and indeed that of the town residents generally, is very good.

The two kinds of fossil shells are from a tertiary bed at Salinas, on the coast. The weapons are what I had intended to have taken with me home, with others I have given away. The lances are of beautiful wood from the Japurá. I could perhaps send a chest full of such curiosities, if they would sell. The aquatic Didelphys is very curiously stuffed by an old negro here, a servant of Dr. Natterer; it lives in brooks, feeding on fish. The three snakes are rare; two are from Macapá. Some few of the Coleoptera in bad order are from Marajo: I thought the Calosoma good.

H. W. BATES.

The above collection has just reached me in fine order; and considering how much Pará and the neighbourhood has been worked lately by Messrs. Bates and Wallace, it is surprizing to see so many *new and fresh things* in this little collection. The species of Erycinidæ and Theclæ appear *endless*. It is a wonderfully rich country for butterflies.

SAMUEL STEVENS.

24, Bloomsbury Street, London,
January 11, 1852.

Notes on Captures of Coleopterous Insects. By the Rev. J.
PEMBERTON BARTLETT, M.A.

It was my intention last year to have sent you a few "jottings down" of my Coleopterian rambles, and of a visit I paid to the Chesil Bank near Weymouth; but a variety of circumstances have prevented my doing so until now. A vacant evening, however, finds me looking over cabinets and note-book, and the reminiscences of past rambles o'er hill and dale inspires me with a *cacoethes scribendi*.

After the very interesting paper which appeared in a former number (*Zool.* v. 1934) from the pen of Mr. Wollaston, it may appear presumptuous in me to refer to my visit to the appropriately named Chesil Bank; for I take it the German word *Kiesel*, a pebble, is the origin of the name; and no name could be more descriptive of the spot than *Pebble-bank*.

It is not, I am sorry to say, to record any new captures that I refer to my visit, but to add my testimony to that of other entomologists, that however insects may abound in a locality one year, it is no criterion that they will be found in like abundance another year. Perhaps it was unreasonable that I should expect to find specimens of all the rarer beetles which were taken there by Mr. Wollaston; I did however hope to do so: but Hope, as is not unfrequently the case, "told a flattering tale," for several which were mentioned as occurring in some abundance, were not to be found at all; while one or two which in 1847 were recorded as found sparingly, were in 1850 to be found plentifully.

Mr. Wollaston considers "the height of the season" for this locality to be the latter end of May. I arrived there on the 5th of June, which as the season had been a backward one, might be supposed a good time; possibly, however, it was too late for some of the missing species, and yet it is remarkable that *Cillenum laterale*, which Mr. Wollaston found "by thousands," I could not discover at all, although I searched in the very same "sandy flat" described in his paper. *Dyschirius thoracicus* was to be found very sparingly, while *Phytonomus mixtus* might be taken by dozens!

Again, *Micronyx Tangermannii* which, in 1849, might be "sparingly picked up," was very abundant; while of *Omophlus Armeriæ*, which in that year was "in abundance," I only succeeded in finding a single specimen! Of *Licinus silphoides* I took about half a dozen, and of the *Tychius* mentioned by Mr. Wollaston, a few specimens.

Masoreus luxatus and *Mecinus circulator* were found sparingly.

Many of the common kinds were in great force, running from under the stones by the dozen; *Harpali* and *Calathi* racing with each other, and, in making good their retreat, running foul of the aldermanic and short-legged *Opatrum sabulosum*, or slipping over the polished back of *Brosicus cephalotes*, as he lay ensconced in his sandy cell, into which the unceremonious Coleopterist so suddenly lets the light of day, that before he has time to "get his wits about him," he finds himself seized and plunged into an atmosphere of Prussic acid, which effectually puts an end to all thoughts about his future welfare.

There are few spots which so abound with Coleopterian life as this far-famed locality, which is indeed well worth a visit by any one interested in Coleoptera.

On the 14th of November, in the same year, happening to be at Weymouth, I walked to Portland, and spent a few hours at "the Bank;" but how changed the scene! Stone after stone was turned up, but none of the crowds just mentioned were to be seen; a few sleepy *Harpali* and *Calathi*, and an occasional *Amara*, were the only representatives of the mass of beetle life with which the spot teemed in June.

While spending a few weeks in Kent in the spring of this year, on the 23rd of May I paid a visit to the sands near Deal. Here also I remarked a great scarcity of many beetles which had been plentiful when I visited that locality in 1849. I found a general lack of even the commoner kinds, caused partly perhaps by the ungenial spring.

After a diligent search of some hours, I succeeded in finding nine specimens of *Lixus bicolor* under the *Erodium*, but not a single specimen of *Hypera fasciculosa* did I find, although it was there in abundance on my last visit; and as it is double-brooded, I expected to meet with it thus early. *Phytonomus mixtus* was there sparingly, but not a specimen of *Apion Sedi* rewarded my most careful search among the plants whose name it bears, although it was taken here by my friend Mr. Dawson "early in May" in 1849.

As far as my experience went, this year (1851) was not a good season for Coleoptera. Although I was in Kent from the 12th of May to the 12th of June, the only two insects (with the exception of the *Lixi* just mentioned) that I took worth noticing, were one specimen of *Callistus lunatus* and one of *Plinthus caliginosus*; the former was under a stone on a chalky bank, and was in most beautiful condition, the colour on the elytra being bright orange, and the spots bright black, a very different looking insect when alive from the faded and dull

appearance that comes over this species when dead : the latter I took walking in a lane ; he was apparently bent on an evening's stroll, or, it might be, on his way to keep an appointment with Mrs. Plinthus on the opposite bank.

I paid a visit during my stay in Kent, to the Covert wood in which I took so many interesting species in 1849 ; but here the same scarcity was observable, not only of the rarer but also of the commoner species.

I will here take the opportunity of correcting an error in my paper in a former number, (Zool. viii. 2682). Among the captures in this wood I mention *Rhagium Indagator* ; this should have been *R. Inquisitor*, which is abundant there.

In Hampshire also, this year, I observed a greater scarcity of interesting species than in the last. I took a specimen or two of *Anthribus albinus*, and three of that beautiful beetle *Carabus nitens*, which is another insect that loses much of the richness of its tints by being killed and preserved. When running swiftly in the sunshine, their bright and variegated elytra look as if they had derived their colours direct from some rainbow.

In an open part of the forest I find *Cicindela sylvatica* in some abundance. The spot, although in the forest, has not a tree within a mile, and is a sandy plain, partly covered with heath and furze. A road runs through the sandy plain, and on either side of this road, to the extent of about 50 yards in length and 15 in width, these handsome insects are to be seen flying from one little patch of sand to another, or, alighting, they run with great swiftness, looking somewhat like large spiders at first sight. The illusion, however, speedily vanishes, for on the slightest movement near them they start up and take wing, and it is then not an easy matter to catch them. I found it in vain to search for them beyond the boundaries I have named ; this spot is the only locality in which I have found them, although I have searched for miles in the surrounding sandy heath, which is to all appearance in every respect similar to the favoured spot in which they abound.

Cicindela campestris was to be found in abundance, without limit as to locality.

The *localism* of many insects has often struck me as a most interesting fact in their natural history. I will just mention another instance which I met with here also, in reference to *Elater balteatus*. I took several specimens of this insect, by sweeping with my net some bunches of heath in a wood near here. As heath was to be found

scattered throughout the wood (which I suppose contains 200 or 300 acres), I expected to find this *Elater* in any part. But no! — after sweeping in all parts, I never could succeed in finding a single specimen save in the same little row of heath-bushes, on the same bank on which I first discovered it; and here I was always sure to find a few specimens.

Last year I used to find *Chrysomela distinguenda*, in some abundance, crawling at the road-sides in this neighbourhood, but this year I did not find a single specimen. The same observation applies to *Chrysomela Banksii*. Last year I took several specimens in the road, this year none. Last year also I met with two stray specimens of the beautiful *C. Göttingensis*, this year I was not so fortunate.

By the way, can any of your readers inform me what this last-mentioned *Chrysomela* feeds upon? I have taken several specimens, both here and in Kent, but they were always wandering singly, as if in search of something, indeed I think several of the family are somewhat of an erratic nature.

Having noticed in the 'Zoologist' that *Nebria livida* and *N. complanata* were to be found at the cliffs near Bridlington Quay, I deputed one of my brothers, who lives in the neighbourhood, to procure some for me. He went one evening in August, between 6 and 7 o'clock, and although no collector, he had no difficulty in discovering the whereabouts of *N. livida*, which was most abundant. This time he staid only *ten minutes*, but the result of that ten minutes' research I received two days after, in the shape of seventy-five specimens of *N. livida*, and several others of a commoner kind.

Another visit was afterwards paid to the spot, in the hope of finding *N. complanata*, but my brother could not find a specimen of it, while in the mud-cliffs *N. livida* literally swarmed. He informed that on splitting open the cracks in the clay, they stuck together by dozens, and that hundreds might easily have been taken.

J. PEMBERTON BARTLETT.

Fordingbridge, December, 1851.

Trochilium Chrysidiforme. — Until within these five weeks I had not heard of a specimen of the above insect being in Mr. Curtis's or in any other collection, beyond the one referred to in my 'Illustrations,' and the (at present apocryphal) capture, in Hampshire, of a specimen by Mr. Barron, or I should not have rejected it from my recent List. The example referred to by me as above, now in Mr. Shepherd's collection, was alleged to have been taken by Mr. Francillon, as I was informed by Mr. Haworth, in a thick grove; but in a list of the rarer British species of which indige-

hous specimens were in his (Mr. F.'s) collection, now in my possession, not any notice is taken of the insect in question; and as it was noticed by Haworth in his 'Prodrromus' so long back as 1802, under the name of *Sphinx flammeus*, and no second example had occurred, to my knowledge, after an interval of fifty years, I was disposed to question the indigenous pretensions of the species, and rejected it accordingly from the British Museum List. It appears, however, to be a scarce insect, as I have hitherto failed in obtaining a specimen of any kind in illustration of the species. The fact of its having been recently taken in England is satisfactory, as it appears an unlikely insect to have been introduced by commerce.—*J. F. Stephens; Eltham Cottage, Foxley Road, Kennington, January 10, 1852.*

Gastropacha Ilcifolia again.—A letter of the 9th instant, from Mr. Wm. Green, of Sheffield, informs me that he has succeeded in obtaining two more larvæ of the above insect, after the unprecedented labour of "upwards of 100 days' hunt" for specimens. One of these larvæ is unfortunately dead, and is in my collection of British metamorphotic illustrations; the other is still alive, in pupa: it ate the young leaves of the apple and willow.—*Id.; January 20, 1852.*

Food of Micro-Lepidoptera.—One of your correspondents, a short time ago, asked for notices of the food of Micro-Lepidoptera. I would earlier have sent the following account of a pretty Eupithecia, but delayed in the hope of being able to ascertain its name. Mr. Bree submitted a specimen to Mr. Doubleday, who cannot identify it with any named British species, but has made the following remark:—"It has been taken by Mr. Sheppard, but does not seem at all common." On August 23, 1850, my attention was attracted to a small caterpillar feeding among the flowers of *Pimpinella Saxifraga*, in this parish. After carefully searching I could find no more than five of the same kind. Placed in a glass jar, and fed for two or three weeks, they went under ground. I observed that the petals were gnawed off and lay scattered about, and that only the innermost parts of the flowers and summits of their pedicels were eaten. Four of the five insects appeared in the winged state, the first coming out on the 6th of July, 1851; unluckily, two of them were accidentally destroyed, one I retain, and the other is in Mr. Bree's possession. *Eupithecia linariata* is described in a general way as feeding on *Linaria vulgaris*. I have observed the caterpillars of this species bore into the unripe capsules in order to feed on the young seeds, and have bred them by supplying them with these, and also with the capsules of a garden *Linaria* (purple I think it was), but I did not observe them feeding on the leaves.—*J. S. Henslow; Hitcham, Suffolk, December 30, 1851.*

A Buzz from the Bees.—I read with great pleasure the observations of Mr. Landstroth in your last number (Zool. 3342). In the same journal for 1844 (Id. 748) there is the following quotation from Mr. Huish, an author and bee-master of some experience; who says,—"It is of no use to look at hive bees in a glass hive, as they are alarmed at the light, and cease from all operations," and also that "the motions of the queen are enveloped in mystery," &c. Now Mr. Huish said this *in haste*; I have a Huber show hive, and will venture to say that the bees become accustomed to be looked at after a few times. In this hive there is only room for one comb; it is about 2½ inches wide, and suited for a small second swarm or cast, only fit for show and examination, for I have never been able to keep them alive during a whole winter, although in a room inside the house, the bees working from an aperture cut through the window. I have watched the queen laying eggs many times with some friends, and it is a very interesting sight. She traverses the combs very slowly, the bees making a lane for her

to pass, always turning their heads towards her on her near approach, and never by any chance attempting to walk over her, as they do the workers or drones. When she comes to an empty cell, she goes into it head foremost, examines it for about a couple of seconds, comes out, and then returning backwards into the cell, deposits the egg in about two seconds more: and so she proceeds from cell to cell, with this exception, that when a cell seems defective, she comes out much sooner, and passes by it without depositing the egg. I am indebted to a medical friend for a pattern of my show hive in Bristol, from which I had mine made about fifteen years ago, and at whose house I first saw the queen bee lay some eggs, and observed also the workers ridding themselves of their wax. Mr. Huish's theory of the impregnation of the eggs by the drones without connexion with the queen, is very ingenious, but very improbable. I believe the queen is impregnated, as Huber says, probably at the swarming-time; and she is so surrounded by bees, and the time of connexion of so short a duration, that it has never yet been distinctly discovered by mortal eye. Mr. Nutt, a very good bee-master, says in one of his papers, that the queen never goes into the side boxes of hives; this is another mistake: wherever there are combs she will traverse. But in many seasons the bees commence works in the side boxes, and never finish them; this happens in the showery cold summers we have so many of in England: a good year for bees seldom occurs above once in three years on the average.—*H. W. Newman; New House, Stroud, January 8, 1852.*

Capture of Calosoma Sycophanta in the Isle of Wight.—A living specimen of *Calosoma Sycophanta* was brought to me on the 16th, by a man who found it beneath a stone at Bonchurch, when at work, within a mile of this house. It is a female, and quite perfect; in size it equals the largest dimensions given in Stephens' Manual, and the play of colour on the elytra is very splendid, varying from blue, through every shade of green and brass, to a fiery red. The place where it was found is a quarter of a mile inland, with high cliffs between it and the sea. This, as far as I am aware, is the first instance of its capture in this island. I kept the insect alive from the 16th until yesterday the 20th, supplying it with meat and an earth-worm, neither of which it appeared to touch. Having heard it asserted that this species possesses extraordinary swimming powers, being sometimes picked up many miles from land, and that in this way it visits our coasts; I determined, before ordering it out for execution, to put its capabilities to the test on a small scale. Accordingly, it was set afloat in a basin half full of water, and to judge from its helpless appearance in this small arena, I should think its term of existence would have expired before it had swam half way across the channel. That it might cross the water by other means than its natatorial powers there can be no doubt; the Carabidæ are not much famed, however, for taking long flights, nor are they a class, like the longicorns, liable to be introduced in timber or other produce. It is, notwithstanding, somewhat strange that an insect which is stated to frequent trees to feed on lepidopterous larvæ, should occur with us almost universally on or near the shore. I am not aware of any recorded instance of its capture on a tree in this country, though it is a species not easily overlooked, and from its beauty almost sure to be secured. Although not an active insect, it moved over a rough surface at a good pace, advancing more than half an inch at each stride. The fore and hinder leg on the right side moved in unison with the middle left leg, and *vice versâ*. I do not know if other large Carabidæ always move in this way, but its gait struck me as very measured and peculiar; the fore legs, moreover, were lifted high at every step, and its movements gave it quite a dignified appearance.

As a living specimen is not to be obtained every day for experiments, I thought that perhaps these remarks might have some interest. — *George Guyon ; Ventnor, Isle of Wight, January 21, 1852.*

Notes on the Marine Mollusca of Weymouth.

By WILLIAM F. TEMPLER, Esq.

THE following Notes give the results of my collecting during the years 1849 and 1850. The dredge has always been considered the best method for procuring shells, and by many has been the only plan adopted for obtaining these beautiful and interesting objects, but how few of the numerous frequenters of the sea-side are able to incur the expense of dredging, apart from (what I conclude it would be to many) the discomfort of the sea !

There are three methods by which the inhabitants of the sea may be procured, varying according to the localities in which they reside.

The Mollusca inhabiting the laminarian and littoral zones, may be obtained by minute and careful examination of the rocks, stones, and sea-weeds, turning back and examining the smaller stones, in the crevices of the lower surface of which many of the smaller kinds, as *Rissoæ*, *Chemnitzia*, *Odostomia*, &c., may be found. A few small pill-boxes will be useful in collecting these minims of creation, as well as a small pair of forceps ; a geological hammer and a pick-axe will also be serviceable for disentombing the stone-boring Mollusca, as *Pholas*, *Saxicava*, and *Venerupis*. In examining the laminarian zone, the spring tides should be selected, as it is only then that the larger Laminariæ are uncovered. On sandy beaches may be found the burying mollusks, as *Solens* and *Macræas*.

The second and most abundant source is the dredge.

And thirdly, the examination of sandy beaches after heavy seas.

It is the first and third methods that offer the greatest facilities to the collector, as requiring little or no expense, a very important consideration in the study of Natural History.

Gastrochæna modiolina and *Saxicava arctica* may be obtained by breaking up large stones, which are not unfrequently brought up by the trawlers in the nets.

Kellia suborbicularis may likewise be found in similar situations with the above.

Venerupis Irus. Imbedded in the soft rock beneath Sandsfoot

Castle, the locality mentioned by Mr. Hanley in his and Mr. Forbes's interesting work on the British Mollusca.

Mya truncata may now and then, after very rough weather, be found washed up in Weymouth Bay, but it is not common.

Lyonsia Norvegica. In the year 1849 I picked up two specimens on the Smallmouth Sands, which measured about an inch in length. Weymouth is mentioned by Messrs. Forbes and Hanley as producing the finest specimens known.

Thracia villosiuscula is now and then, after rough weather, thrown up on the sands at Smallmouth.

The solens or razor-shells are very common on the sands both in Smallmouth and Weymouth Bays; the people call them long oysters. During March, 1850, I found a fine full-grown specimen of *Solen siliqua* on Smallmouth Sands, measuring nearly eight inches in length and more than one inch in breadth. The solens have the greatest length and least breadth of all the known Mollusca. The razor-shells, or rather mollusks, at low water, are frequently to be seen in some numbers protruded from the sand, and sometimes they have pushed themselves entirely out, and lie flat on the sand. From what I have observed they appear to protrude themselves more out of the sand on the retiring of the tide, and not to bury themselves deeper, as is mentioned in the description of *Solen marginatus*, in Messrs. Forbes and Hanley's British Mollusca.

Psammobia Ferroensis. Washed up on the Smallmouth Sands after rough weather, sometimes numerous, but never alive; although I have dredged many, and had many more brought me by the dredgers, I have never been able to obtain it alive.

Tellina incarnata. In 1849 and 1850 I have from time to time found the shell of this mollusk on the Smallmouth Sands, but never numerous, and I think I have never taken it alive. I have obtained only six specimens during the two years above mentioned, but single valves and broken shells are more frequently to be met with. This is a scarce British mollusk.

Tellina tenuis is very common in Weymouth Bay after rough weather, especially close to the steps opposite to the Victoria Hotel; both live and dead specimens are to be found, but the latter predominate, although in a very good state of preservation.

Tellina fabula. Washed up at times in Weymouth Bay, with the above, but not so numerous.

Donax anatinus. Frequently washed up in Weymouth Bay, especially in the spring of the year, when an *Ulva* is attached to one end,

which causes it to be washed ashore. It is not so often found in winter, the *Ulva* being an annual.

Mactra subtruncata buries in sand, and may often be found at low-water spring tides, on the Smallmouth Sands, having worked its way out of the sand, in the same manner as the solens are in the habit of doing upon the ebb of the tide.

Mactra stultorum. Frequently very common in Weymouth Bay after storms. May 15, 1850. — At low water this evening they were very numerous, the tides at the spring; they seemed to live here either lying about on the sand or buried in it, and had not been washed in from deeper water by rough seas, as the sea had been perfectly calm for many days previously. Most of them were about half grown, and I do not recollect having before or since obtained them in this intermediate state of growth. After very rough seas, I have found very minute young specimens by thousands on the Smallmouth Sands, although, strange to say, I have never found adult specimens here in any abundance, if I have taken them here at all.

Tapes pullastra. Sometimes very abundant in Weymouth Bay after storms.

Tapes aurea. Washed up by storms on the sands in Weymouth and Smallmouth Bays. In the early part of April, 1850, after strong easterly winds, they were very abundant.

Venus striatula. A most abundant mollusk here, both in Weymouth and Smallmouth Bays, and may be found almost every day in the latter locality at low tide.

Lucinopsis undata is sometimes washed up on the Smallmouth Sands, both alive and dead.

Cardium echinatum. March 16. — Yesterday the wind blew strongly from the eastward, and upon the Smallmouth Sands this day I found many marine objects strewed about, amongst which were some very large specimens of this species; one of them measured $9\frac{1}{2}$ inches in its longitudinal circumference, and $10\frac{1}{2}$ inches in its transverse circumference. Very young and beautiful live specimens may likewise be found at times on the above sands.

Cardium rusticum. February 26, 1850. — This day I found a fine specimen alive on the Smallmouth Sands, it having been but recently washed up. It was on the sand at very low-water spring tides, in a similar situation to that mentioned in Messrs. Forbes and Hanley's *British Mollusca* on the Paington Sands, Torquay. As a British species it is essentially local.

Cardium edule. Abundant after rough weather in both Weymouth and Smallmouth Bays.

Cardium nodosum may at times be found upon the sands in Smallmouth Bay.

Modiola barbata. On April 1st, 1850, one was taken alive on the Smallmouth Sands.

Crenella discors. March 8, 1850.—I found it this day attached to the under side of large loose pieces of rock between tide-marks, below Sandsfoot Castle, in some numbers. It is also frequently washed up, both on the Smallmouth Sands and in Weymouth Bay. Once I saw it, in the former locality, strewing the beach from one end to the other, at half-tide level.

Arca lactea. Adhering to oysters in abundance, when they may be obtained from the fish-women in the market, and the oyster-dredgers.

Pecten opercularis. Washed up on the Weymouth and Smallmouth Sands, after rough weather, in abundance. There are large beds of this mollusk in the bay, and it may be frequently seen in the markets, where it is sold for food. I have seen single valves of the variety *lineatus* on the Smallmouth Sands.

Fissurella reticulata. Weymouth and Smallmouth Sands, after stormy weather.

Trochus Zizyphinus. This mollusk may be found, and is not uncommon, among the rocks at the end of the pier, also under stones on the inner or harbour side of the pier. In order to find the shells in the former locality, it is necessary to turn over the large rocks, to the under side of which they may be found adhering. In the other situation, turn back the sea-weeds from the rocks, when the mollusks will be seen.

Rissoa cingillus. Attached to the under side of loose stones, among the flat ledges of rock beneath Sandsfoot Castle.

The above Bays are likewise very rich in CRUSTACEA, for an enumeration of which I may refer to Mr. Thompson's paper on the Crustacea of Weymouth, in the number for July, 1851 (Zool. 3158).

ECHINODERMATA.

Solaster papposa. Weymouth Bay.

Asterina gibbosa. Smallmouth Sands.

Palmipes membranaceus. Weymouth Bay.

Uraster rubens. Very large.

Asterias aurantiaca.

Ophiocoma neglecta. Beneath stones below Sandsfoot Castle.

Ophiura texturata. Weymouth Bay.

Spatangus purpureus. Rare.

Amphidotus cordatus. Not uncommon on Smallmouth Sands.

The Chesil Bank, towards Portland, after heavy gales from the westward, is a rich collecting-ground, especially for Zoophytes, and at times the beautiful *Gorgonia verrucosa* may be found in perfection.

This is very far from being a complete marine Fauna of Weymouth, and a whole volume would not exhaust its resources, but I hope the above will induce my friend Mr. Thompson, who I believe is now the only resident collector of those interesting objects, to supply its deficiencies, as well as other contributors to the 'Zoologist,' who may happen to visit this favourite watering-place.

WILLIAM F. TEMPLER.

Buddleigh, Salterton, Devon, December 18, 1851.

Proceedings of the Zoological Society.

Monthly General Meeting, January 1, 1852.—W. J. BRODERIP, Esq., V.P., in the chair.

Messrs. A. B. Hope, M.P., J. D. Gordon, and G. R. Gray, were elected Fellows.

Messrs. J. H. Gurney, T. Lacy, G. Gillett, R. O'Brien Jameson, and Miss Burdett Coutts, were proposed as candidates for the Fellowship.

The Report of the Council stated that the total number of visitors to the Gardens during the year 1851, had been 667,243, and exhibited an increase over the year 1850 of 306,841. The most important additions to the Menagerie during the last month, consisted of an Apteryx, presented by Lieut. Governor Eyre, which had been brought from New Zealand by Capt. Erskine, R.N.; a Weka (*Ocydromus australis*), also from New Zealand, which had been presented by Capt. Stokes, R.N., late of H. M. S. Acheson; and two specimens of *Boa diviniloqua*, presented by Lieut. Forman, of Her Majesty's 88th regiment.—D. W. M.

Proceedings of the Entomological Society.

January 5, 1852.—J. O. WESTWOOD, Esq., President, in the chair.

The following donations were announced, and thanks ordered to be given to the donors:—'Bulletin de la Société Impériale des Naturalistes de Moscou,' Nos. 3 and 4, 1850, and No. 1, 1851; by the Society. 'Insecta Caffrariæ, annis 1838—45, a J. A. Wahlberg collecta, descripsit C. H. Boehman; pars 1, fasc. 2.—Coleoptera: Holmiæ, 1851; by the author. 'The Entomologists' Companion, being a Guide to the collection of Micro-Lepidoptera,' by H. T. Stainton: London, 1852; by the Author. 'The Zoologist' for January; by the Editor. 'The Literary Gazette' for January;

by the Publishers. 'The Athenæum' for November and December; by the Editor. 'Diagnosen neuer Coleoptera aus Abyssinien von Dr. J. B. Roth.' München, 1851; by the Author. 'Systematische Uebersicht der Käfer um München, von Dr. Max Gemminger.' Jena, 1851; by the Author. 'Bulletin der Königliche Akademie der Wissenschaften,' Nos. 1—33: München, 1851; by the Academy. 'Descriptions of the Insects brought home by Commander James Clark Ross,' by John Curtis, Esq., F.L.S.; by the Author.

Mr. Adam White exhibited a specimen of the moth, *Anarta richardsoni* (*Hadena richardsoni*, Curtis, in 'Appendix to Sir John Ross's Arctic Voyage'), taken by Charles Ede, Esq., on the north shore of Baffin's Bay.

Mr. White also exhibited some rare and beautiful insects, part of a quantity sent to him for this Society by Hugh Low, Esq., Corresponding Member at Labuan. Among the Coleoptera were *Trictenotoma Childreni*, *G. R. Gray*, *Sarothrodera Lowii*, *White*, *Chrysodema Helena*, *White*, *MSS.*, and *Cladognathus Tarandus*, *Thumb.* Among the Lepidoptera were *Thaumantis? Lowii*, *Hawitson*, *MSS.*, *Papilio Neptunus*, *Guérin*, a series of an Ornithoptera, and a fine species of *Terias*. Mr. White took occasion to remark that the *Trictenotoma* had an extensive habitat, ranging from Tenasserim to Borneo; and that the same observation might be applied to some of the Lepidoptera now before the Society, certain of the species being also found at Assam and Sylhet. Indeed there was a great similarity among many Lepidoptera from Singapore, Sumatra, Java and New Guinea, insomuch that it might be almost doubted whether the differences relied upon by entomologists as pointing out distinct species, were any more than variations, induced by the altered circumstances of the several localities. The genus *Ornithoptera* was probably abundant in New Guinea, as nearly all our specimens had come thence; it extends also along the N. E. coast of Australia. *Papilio Turnus*, which extends southward as far as Florida, has been found also as far north as Wolstenholme Sound. On the other hand, it was certain the habitat of many species of insects was very circumscribed, many places, islands in particular, having peculiar forms and species.

Mr. S. Stevens remarked that he had received from China a *Colias* which did not differ, in any respect, from the European *C. Hyale*.

Mr. White observed that the genus *Colias* has a wide range — the species being found throughout the temperate regions of Europe, Asia, and America, but it did not appear that they extended further to the South. *Cynthia Cardui* is found everywhere, agreeing in every respect with our English specimens.

Mr. J. E. Gray remarked that this identity of appearance in some species was not confined to insects, for among the Vertebrata, the moose deer was found from the centre of Siberia to the south of the Himalayas, and no difference was perceptible.

Mr. Curtis remarked that he had lately seen a collection of insects from Calcutta, which had generally a very European appearance; and in another collection from Van Diemen's Land, they were so like European forms, that they might be associated therewith generically if not specifically.

The President remarked that in looking at some insects from Shanghai, he had been struck with the remarkable resemblance, in several instances, not only to European, but even to English species.

Mr. Curtis exhibited an exotic species of *Cicada*, found alive on the 11th of August last, in one of the hot-houses in the Horticultural Society's Garden at Chiswick, into which it had probably been brought with some *Ochridaceæ* from Central America.

He also exhibited a curious nest of eggs of a spider (*Epeira zebrata* ?), which he found at Nice last spring. It was of a dirty white colour, of a spherical shape, and about an inch in diameter; M. Guérin had informed him that these nests were sometimes thrice as large.

Alluding to the experiment of Sir James Ross, mentioned at the last meeting, Mr. Curtis read the following note from the 'Appendix' to Sir J. Ross's Voyage, in 1830, transcribed by him from Sir James's MSS. — "About thirty of the caterpillars were put into a box in the middle of September, and after being exposed to the severe winter temperature of the next three months, they were brought into a warm cabin, where, in less than two hours, every one of them returned to life, and continued for a whole day walking about. They were again exposed to the air at a temperature of about 40° below zero, and became immediately hard frozen; in this state they remained a week, and on being brought again into the cabin, only twenty-three came to life. These were at the end of four hours put out once more into the air, and again frozen; after another week they were brought in, when only eleven were restored to life. A fourth time they were exposed to the winter temperature, and only two returned to life on being again brought into the cabin. These two survived the winter, and in May an imperfect *Larva* (Rossii) was produced from one, and six flies from the other; both of them formed cocoons, but that which produced the flies was not so perfect as the other."

Referring to the exhibition at the meeting of this Society on the 4th of November, 1860, by Mr. Evans, of some Culicidæ received from the Great Slave Lake, Mr. C. said he had no doubt they were the *C. Caspius* of Pallas, of which insect Sir James Ross remarked that "It first appeared about the 10th of July, on the 15th it became very numerous, and on the 22nd so exceedingly troublesome as to prevent the necessary duties of the ship. They swarmed in perfect clouds over the marshes, and their larvæ constitute the principal food of the trout that inhabit the lakes. On the 13th of August they came out again after the rain, but were no longer very troublesome, being apparently nipped by the frost at night." Mr. Curtis added that Sir James told him the crew were obliged to wear nets over their faces while fishing.

The Chironomus and Tipula exhibited by Mr. White at the last meeting, Mr. Curtis said were described by him in the 'Appendix' to Sir J. Ross's Voyage already mentioned, the former being the *C. polaris* of Kirby, the latter the *Tipula arctica*, Curtis. It was a curious fact, that all the Culicidæ received from the Arctic regions were females.

With reference to the note on *Ocyropsis olens*, read at the last meeting, Mr. Curtis said that in the 'Gardener's Chronicle' of November 5, 1842, he had made the following note on this insect, showing the value of these persecuted animals in gardens, especially in the autumn, when earwigs are most abundant and destructive to flowers:—

"Having heard that our rove-beetle was the natural enemy of earwigs, I placed one with a few of these insects under a tumbler glass. It commenced running round the inside, now and then resting, but it soon seized an immature earwig by the middle, and a full-grown one soon after, just behind the forceps, the back being uppermost, and in an hour and a half it had eaten six earwigs."

Mr. Curtis then referred to vol. i. p. 107 of the new series of this Society's Transactions, where, as one of the Gelechiæ, Mr. Douglas has recorded *Butalis cerealella* as

* Erichson, Gaubil, &c., adopt this name, and not Goërius.

a native insect. Mr. Curtis expressed his belief that Mr. Douglas's specimen was imported, and that fortunately the species was not British, for in France corn in granaries decreased from 40 to 70 ¢ cent. by its feeding thereon. He further observed that the species is well characterized by its extremely falcate inferior wings, and is apparently related to Stephens's genus *Cleodora*, which is established by dissections in plate 671 of the 'British Entomology,' though now included by Mr. Douglas in the genus *Gelechia*, which, as it now stands in Mr. Stainton's Catalogue, is a most heterogeneous group. Mr. Curtis expressed his regret that we cannot come to some understanding regarding generic names, for until they are settled, science must be a labyrinth not easily comprehended by the learned entomologist, and incomprehensible to the young student in Natural History.

Mr. Spence read an extract of a letter from G. H. Thwaites, Esq., M.E.S., now in Ceylon, informing him that he had lectured to a mixed audience of Europeans and Cingalese, on the habits and instincts of insects, especially directing attention to the Termites, with a view to the study of their metamorphoses.

The President read a note from Albert Way, Esq., stating that in a basket of old Roman bones, sent a year or more since to Mr. Quekett, at the College of Surgeons, for examination, were found, after a long interval, a great number of *Obrium minutum*, which had doubtless proceeded from the willows of which the basket was made. The President said that Mr. Stevens had once brought a similar case before the Society; and Mr. Smith added that he had more than once reared this beetle from bramble-sticks.

Mr. Stevens exhibited a very fine variety of *Argynnis Paphia*, beautifully suffused with black, which had been captured in 1849 at Darenth Wood.

The President read the following extract of a letter from Brigadier J. B. Hearsey, dated Wuzeerabad, August 6, 1851, and exhibited the insects referred to.

"As I was sitting in my flower-garden on the 4th of this month, with a 'bearer' fanning me with a large date-palm-leaf fan, he called my attention to a large showy plant of *Cenothera speciosa*, which he was aware I was taking great care of, covered with insects. It was then three feet high, and had eight or ten branches; the whole was densely covered with insects (the *Galeruca* sent herewith); they could not have been on it half an hour, and it was almost denuded of foliage and flowers. I drove them all off, and put twenty or thirty into a bottle of spirit of wine. The sun had now set, and soon after I went into my house, as it is not wholesome to sit out of doors in such hot, steamy nights. The next morning, the moment I was dressed, I went into the garden to look at my "*speciosa*:" the ten stems had nothing on them but some hard seed-capsules, every leaf, flower, and bud was devoured, and the stems bending from the weight of these *Galerucæ*. I determined on revenge. I ordered two 'chillumchees' (large, circular, shallow brass pans, which are used in this country for the water to fall into as the 'bearer' pours it into your joined hands to wash your face with, and also to wash your feet in) to be put under the stems and half filled with boiling water, the stems were then shaken, and the insects that did not fall were knocked into them as they attempted flight; at least 1000 were thus destroyed. But now for the wonderment. The *Cenothera speciosa* is one of three kinds of that plant that I have raised from American seeds. I had blossoming in my garden one plant of *C. speciosa*, and several of *C. salicifolia* and *longicaulis*. These plants were never grown in this country before this rainy season, and certainly never blossomed. The *speciosa* does not flower till the second year, but still, an insect produced in this country, which

could never have tasted or felt the perfume of this American plant, nor could even its progenitors have done so, selects it, the only one of its species in my grounds or in the country, for its food, destroys it completely, and touches no other! How can you account for this? Could the *Ce. speciosa* have had a perfume (to me the flower has but a slight scent) so strong to the senses of this insect as to attract it in the mass? Please to ask any entomological friends if that is the way they can account for this proceeding, or can it be accounted for in any other manner?"

Mr. Douglas remarked that probably the usual food of this *Galeruca* was some plant of the same natural order as *Oenothera*, but that this does not always apply, for he once, in this country, found caterpillars of *Cucullia Verbasci* feeding on *Buddlea globosa*, a native of Chili, and not in the same natural order as *Verbascum*, on the leaves of which they usually feed.*

Mr. Douglas read descriptions of ten species of *Gelechia*, being the completion of his Memoir on the British species of that genus. On a future occasion he intended to offer some observations on the structural characters of the genus, and now, at the request of many friends, he gave the following provisional arrangement of the species, according to the characters indicated by Zeller, in the 'Isis,' 1839.

A, a.	fumosella	scriptella	inopella
a.	nigra	fugitivella	paupella
lobella	cuneatella	aleella	Gerronella
Populella	longicornis	Mouffetella	nigricostella
temerella	diffinis	triparella	dodecella
	sororculella		vulgella
b.	Galbanella	b.	nanella
rufescens	boreella	ligulella	albiceps
inornatella	domestica	vorticella	gemmaella
cinerella	basaltinella	tæniolella	luculella
Malvella	leucatella	Coronillella	Artemisiella
vilella	alacella	nigritella	pulliginella
politella	pelella	Anthyllidella	næviferella
terrella	fraternella	atrella	Hermannella
desertella	marmorea	bifractella	Brizella
acuminatella	junctella	affinis	Ericinella
senectella	maculiferella	mundella	picbella
mulinella	vicinella	immaculatella	
divisella	celerella	tenebrella	B, a.
distinctella	costella	tenebrosella	conscriptella
fumatella	contigua	lucidella	gibbosella
velocella	sequax	lutulentella	
lentiginosella	blandella	cerealella	b.
Atriplicella	Hübneri	suffusella	Lappella
instabilella	rhombella	littorella	Carlinella
obsoletella	proximella	subocellea	Metzneriella
gallinella	notatella	fuscipennis	neuropterella
æthiops	humeralis		

— J. W. D.

* These two plants are now referred to the natural order Scrophulariaceæ.—*Ed. Zool.*

Proceedings of the Society of British Entomologists.

January 6, 1862.—Mr. HARDING, President, in the chair.

The Secretary read a Report of the affairs of the Society for the past year.

The President congratulated the members upon the prosperous state of the Society, which had been going on steadily if slowly, this being the eighteenth Anniversary. The Society was without debt or drawback of any kind; and with plenty of materials to work upon, and hands and hearts ready and willing to work, it must progress. He was happy to see that none of that aristocratic feeling prevailed in this, as it did in some other Societies, which closed their ranks against the working man; as knowledge increased, however, he trusted that such an ungenerous feeling would vanish. During the past year, many of those which were considered our rarer insects had been captured; indeed some species which were looked upon as doubtfully native had been taken in some plenty. Much of this success was to be attributed to working among the larvæ; and he would impress upon the minds of the members the necessity of attending to this branch of Entomology, which they would find both interesting and profitable. He also stated that whilst the leaves and stems of plants had been well searched, the roots had been comparatively neglected, and thus many insects had been overlooked. The President further remarked, that although during the last ten years Entomology had made great progress, British entomologists were still much behind their continental brethren. This consideration should stimulate the members to further exertions in behalf of their favourite branch of Natural History.

Mr. Sequiera observed that this was the first annual meeting of the Society he had had the pleasure of attending; and begged to be allowed to make a few observations, which, although perhaps containing nothing new, might tend to show the advantage of joining this or some other Society of a similar character, and thus be the means of extending a love of that science to which he was sure all present were attached, and which had afforded them the means of passing so many happy hours, both in their meeting-room and in the merry green wood. He advised all who felt in the slightest degree interested in Entomology, to study the first principles of the science; and then, as they proceeded in their researches, new beauties would be discovered, which would otherwise have remained hidden and unsuspected. A little previous knowledge of families and genera would render the student far more perfect either in the collection or arrangement of insects, than he would become in twice or thrice the length of time expended in collecting without this knowledge. Nothing would tend more to the attainment of this important end, than becoming a member of a Society. Opportunities of improvement would thus be afforded, by means of books, conversation, comparison with specimens in cabinets, and mutual instruction. Mr. S. stated that he could speak from experience on this point. Being but a young beginner himself, he could truly say that he had gained more information in the short time he had belonged to this Society, than he should have obtained in years by other means. All his inquiries had been met in the true spirit of imparting information, for which he begged to express his thanks: and he trusted that the time was not far distant when this Society would be looked upon as a pattern in the diffusion of knowledge.

Mr. Dalman proposed that the cabinet should be arranged according to Mr. Doubleday's List.

Mr. Oxley proposed a vote of thanks to the President.

Mr. Briant proposed a vote of thanks to the Secretary for the use of his microscopes.

All the above were carried unanimously.—*J. T. Norman.*

Proceedings of the Royal Physical Society of Edinburgh.

January 7, 1852. — The monthly meeting of this Society was held in the Institution Rooms, York Place, HUGH MILLER, Esq., in the chair; when there was a large attendance of members and visitors.

Mr. Miller, on taking the chair, delivered the following opening Address: —

“GENTLEMEN, — You have done me the honour of electing me, by a unanimous vote, to be one of the Presidents of the Royal Physical Society. I little thought, some two-and-thirty years ago, when, rather in obedience to a native instinct than with any ulterior object, I sought to acquaint myself with geological phenomena, that there awaited me any such honour. For, unaware at the time that there even existed such a science as Geology, or that the field which it opens has its many labourers, some of whom meet with less, and some with more success in their labours, I could not so much as imagine that distinction was to be achieved by studying the forms and structures of the strange organisms which I laid open amid rocks and in quarries, or in inquiring into the circumstances in which they had lived and died, or into the causes to which, in ages long gone by, they had owed their entombment in the stone. But it seems to be one of the characteristics of a true science, that it should promise little and perform much; and that for those who devote themselves to it simply for its own sake, it should reserve a class of favours of a purely exterior character, rarely vouchsafed to the suitors who make court to it for that dowry of the extrinsic and the adventitious which it occasionally brings. It certainly is one of the characteristics of geologic science, although in a far higher sense than that to which I have adverted, that it promises little and performs much. It contrasts strongly in this respect with those purely mental sciences still properly taught in our higher schools, for they constitute the true gymnastics of mind; but which, like other gymnastics, are to be regarded, not as actual work, but simply as a preparation for it. The use of the dumb bells opens the chest and strengthens the muscles: but it is left to labour of quite another kind to supply the wants of the present, or to provide for the necessities of the future. And such appears to be the sort of relation borne by the purely mental to the natural sciences. How very different, however, the prospects which they seemed to open to the curious inquirer in the earliest ages of their history, or even in the earlier history of individual minds among ourselves. Mental science must have appeared to many of us, when we first approached it, as a magnificent gateway, giving access to a vast province, in which not only all knowledge regarding the nature of mind was to be acquired, but in which also, through the study of the intellectual faculties, we were to be introduced to the best possible modes of acquiring all other knowledge. But have we not been disappointed in our hopes?—nay, from the doubts and uncertainties conjured up by the nice dialectics of the science, have we not had eventually to cast ourselves for escape on the simple instincts of our nature?—and ultimately, have we not gained well nigh as little through the process so imperatively demanded by the metaphysician, of turning the mind upon itself, instead of exercising it on things external to it, as if we had been engaged in turning the eye upon itself, instead of directing it on all the objects which it has been specially framed to see—among the rest, on other eyes, and the peculiarities of their structure? In both natural and physical science, on the contrary, have we not often found, that while the promise has been slight, the fulfilment has been ample, far beyond the reach of anticipation? When the boy

James Watt was playing, as Amgo tells the story, with the steam of the family tea-kettle—now marking how its expansive force raised the lid of the utensil, and now, how, condensed into water, it trickled powerlessly down the sides of the cold china cup which he had inverted over it—who could have imagined, that in these simple processes there lay wrapped up the principle of by far the mightiest agent of civilization which man has yet seen—an agent that, in a century after the experiment of the boy, would have succeeded in giving a new character to the arts, both of peace and of war? Or who could have surmised, when, at nearly the same period, the Philadelphia printer was raising for the first time his silken kite in the fields, that there was an age coming in which, through a knowledge of laws hitherto unknown—but whose existence he was then determining—man would be enabled to bind on his thoughts to the winged lightning, and to send them, with an instantaneousness that would annihilate time and space, across land and sea? Nor in that geological branch of natural science to which, with the cognate branches, our Society has specially devoted itself, has performance in proportion to previous promise been less great. When it was first ascertained by the father of English Geology, William Smith—a man not yet more than twelve years dead—that the colitic beds of England have always a uniform order of succession, and that this uniformity is attended by a certain equally uniform succession of groups of fossils, could it be once inferred that he was laying hold of a principle which, in the course of a single age, was destined marvellously to unlock the past history of our planet, and to acquaint us with God's doings upon it, as the Creator of all, for myriads of ages ere he had first breathed the spirit of life into human nostrils, or man had become a living soul? It is one of the great marvels of our day, that through the key furnished by geologic science, we can now peruse the history of past creations more clearly, and arrive at a more thorough and certain knowledge of at least the structural peculiarities of their organisms, than we can read the early histories of the old dynasties of our own species, that flourished and decayed on the banks of the Euphrates or of the Nile, or ascertain the true character of the half-forgotten tyrants with whom they terminated or from whom they began. The gulf between mental and geologic science is still too broad, and perhaps too carelessly surveyed on the theologic side, to permit us to judge of the influence which the discoveries of the geologist are yet to exercise on the ethical departments of literature. We can, however, already see, that the vastly extended knowledge of God's workings of old, which the science communicates, must exercise no slight influence upon certain departments of natural theology, and give a new tone to those controversies regarding the evidences of our faith which the Church has ever and anon to maintain with the world. Geology has already put an end to that old fiction of an infinite series of beings which the atheist was wont to substitute, in his reasonings, for the great First Cause through which all exists; nor does it leave other than very unsolid ground to the men who would fain find an equivalent for the exploded infinite series of their predecessors, in a developing principle. Nay, I would ask such of the gentlemen whom I now address as have studied the subject most thoroughly, whether, at those grand lines of division between the palæozoic and secondary, and again between the secondary and tertiary periods, at which the entire type of organic being alters, so that all on the one side of the gap belongs to one fashion, and all on the other to another and wholly different fashion—whether they have not been as thoroughly impressed with the conviction that there existed a Creative Agent, to whom the sudden change was owing, as if they themselves had witnessed the miracle of creation? Farther, may we not hold,

that that acquaintance with bygone creations, each in succession of a higher type than the one which preceded it, which Geology enables us to form, must soon greatly affect the state of arguments employed on the sceptical side, which, framed on the assumption that creation is but a "singular effect"—an effect without duplicate—have urged, that from that one effect only can we know aught regarding the producing Cause? Knowing of the Cause but from the effect, and having experience of but one effect, we could not rationally hold, it has been argued, that that producing Cause could have originated effects of a higher or more perfect kind. The creation which it had produced we knew; but having no other measure of its power, we could not, it was contended, regard it as competent to the production of a better or nobler creation, or, of course, hold that it could originate such a state of things as that perfect future state which Faith delights to contemplate. Now it has been well said of the author of this ingenious sophism,—by far the most sagacious of the sceptics,—that if we admit his premises, we shall find it difficult indeed to set aside his conclusions. And how, in this case, does Geology deal with his premises? By opening to us the history of the remote past of our planet, and introducing us, through the present, to former creations, it breaks down that *singularity* of effect on which he built, and for one creation gives us many. It gives us exactly that which, as he truly argued, his contemporaries had not—an *experience in creations*. And let us mark how, applied to each of these in succession, his argument would tell. There was a time when life, animal or vegetable, did not exist on our planet, and when all creation, from its centre to its circumference, was but a creation of dead matter. To what effect, in that early age, would have been the argument of Hume? Simply to this effect would it have borne—that, although the producing Cause of what appeared was competent to the formation of earths, metals, and minerals, it would be unphilosophic to deem it adequate to the origination of a single plant or animal—even to that of a spore or of a monad. Ages pass by, and the palæozoic creation is ushered in, with its tall araucarians and pines, its highly organized fishes, and its reptiles of a comparatively low standing. And how now, and with what effect, does the argument apply? It is now found, that in the earlier creation the producing Cause had exerted but a portion of its power, and that it could have done greatly more than it actually did, seeing that we now find it to be a Cause adequate to the origination of vitality and organization in two great types—the vegetable and the animal—as exemplified in pines and araucarians, in fishes and in reptiles. And now, as yet other ages pass away, the creation of the great secondary division takes the place of the vanished palæozoic; and we find in its few dicotyledonous plants, in its reptiles of highest standing, and in its some two or three comparatively humble mammals, that in the previous, as in the earlier creation, the producing Cause had been, if I may so express myself, working greatly under its strength, and that in this third creation we have a still higher display of its potency. And now yet another creation—that of the tertiary period, with its noble forests of dicotyledonous trees, and its sagacious and gigantic mammals—rises upon the scene; and as our experience in creations has now become very considerable indeed, and as we have seen each in succession higher than that which preceded it, we find that, notwithstanding our assumed scepticism, we had—compelled by one of the most deeply-seated instincts of our nature—been secretly anticipating the advance which the new state of things actually realizes. But applying the argument yet once more, we at least assume to hold, that as the sagacious elephant is the highest example of animal life produced by the originating Cause, it would be unphilosophic to deem it capable of producing a higher

example; and while we are thus reasoning, man appears upon creation — a creature immeasurably superior to all the others, and whose very nature it is to make use of his experience of the past for his guidance in the future. And if that only be solid experience or just reasoning which enables man truly to anticipate the events which are to come, and so to make provision for them; and if that experience be not solid, and that reasoning not just, which would serve but to darken his discernment, and prevent him from correctly predicating the cast and complexion of coming events — what ought to be his decision regarding an argument which, had it been employed in each of the vanished creations of the past, would have had but the effect of arresting all just anticipation regarding the creation immediately succeeding, and which, thus reversing the main end and object of philosophy, would render the philosopher who clung to it less sagacious in divining the future than even the ordinary man? But, in truth, the existing premises, wholly altered by geologic science, are no longer those of Hume. The foot-print of his unhappy illustration does not now stand alone. Instead of one, we see many foot-prints, each in advance of, and on a higher level than, the print immediately behind it; and founding at once on an acquaintance with the past, extended throughout all the periods of the geologist, and on that instinct of our nature whose peculiar function is to anticipate at least one creation more, we must regard the expectation of 'new heavens and a new earth, wherein dwelleth righteousness,' as not unphilosophic, but as, on the contrary, altogether rational, and fully according to experience."

On the motion of Dr. Greville, the thanks of the Society were unanimously voted to Mr. Miller, for his deeply interesting address.

1. Mr. Miller then laid before the Society calotype figures and a plaster cast of Mr. Patrick Duff's unique specimen, the *Stagonolepis* of the superior sandstone deposit of Moray, hitherto deemed old red. With these he also exhibited the figure of a reptile from the lias of Munich—*Mystrisaurus Münsteri*—given in a late number of the Munich Transactions, of which he owed the use to the kindness of Sir Charles Lyell. Sir Charles had been struck by the very close resemblance borne by the scales of the liassic reptile to the scales of the supposed palæozoic fish, i. e., the *Stagonolepis* — a resemblance certainly very marked; and he had written to Mr. M., inquiring whether the true place of the deposit in which the latter had been found, with the lacertian reptile recently detected by Mr. Duff, and the reptilian foot-prints recently discovered by Captain Brickenden, had been satisfactorily determined. Might it not, he suggested, be an arenaceous deposit of the lias? As Dr. Rhind had submitted to the Society, at its last meeting, a drawing of Mr. Duff's lately discovered reptile, Mr. Miller thought he could not do amiss in bringing the subject again before it. He had spent some little time about two years ago, and again in the autumn of last year, in examining the upper beds of the extensively developed sandstones of Moray; and in the quarry near Brughead, in which, shortly before, the reptilian foot-prints had been discovered, he was informed by the workmen that such prints are by no means very unfrequent among the strata. Of this fact Mr. M. had been assured by Mr. Robertson, of Woodside, an accomplished geologist, thoroughly acquainted with the various formations of the district, and to whose researches Agassiz owed his Morayshire specimens of *Bothriolepis*; and until either the one series of rocks—that of the reptiles and the *Stagonolepis*—yielded known old red sandstone fishes, or until the other—that of the *Bothriolepis* and *Holoptychius*—yielded reptilian remains or fragments of *Stagonolepis*, Mr. M. thought that the question as to whether the Brughead and Spynie

beds, with their remains, be liassic or old red, should be left an open one. Caution was also the more necessary, he added, from the circumstance that in that northern district outliers of the lias and oolite are in several instances found resting on and lying to the old red sandstone; and, from the further circumstance that some of the oolitic sandstones bear very much the character of those of Spynie and Brughead. Mr. M. stated, in conclusion, that many years ago he became practically acquainted with a yellow quartzose sandstone, brought from the oolite of Raza, which could not be distinguished from the quartzose sandstone of Brughead; and that an outlier of such a sandstone, resting conformably on those pale sandstones of Moray which contain remains of the *Bothriolepis*, might be readily enough mistaken for an upper deposit of the old red sandstone, although in reality representative of a widely different period in the history of the globe.

2. Mr. Andrew Murray, W.S., read the Report of the Entomological Committee on the order Coleoptera, which detailed what had been done during the past year towards acquiring a knowledge of the Entomology of those parts of Scotland which had been hitherto only partially or not at all examined. The Committee by themselves, or others employed by them, had examined some parts of Ross-shire, some parts of Sutherlandshire, and the north of Fife-shire, besides extending their investigations in quarters nearer home. Among the interesting acquisitions mentioned by Mr. Murray, were *Saperda Carcharias* from Sutherlandshire, *Magdalis phlegmatica* from Kinross-shire, *Magdalis carbonaria* from Perthshire, and an undescribed *Percosia* (proposed to be named *inflata*) from the Clova Mountains. Mr. Murray also mentioned what had been done by Mr. Weaver and Dr. Nelson in the Black Forest in Rannech, and showed specimens of the fine species there found by them; amongst others — *Cetonia obscura*, Dej., *Saperda scalaris*, *Astynomus adilis*, *Lamia Textor*, *Rhagium Indagator*, *Sericoeconus brunneus*, *Clythra quadripunctata*, &c.

3. The next paper which was read was one by Mr. Murray, on the genus *Cercyon*, in which he cleared up the confusion of the synonymy which prevails in that difficult genus, and brought almost the whole of Marsham's and Stephens' numerous species within the number of those recognized on the Continent. Mr. Murray had had peculiar facilities for this, having had the whole of Mr. Little's large collection of *Cercyons*, all named by Stephens, put into his hands by that gentleman for examination.

4. Notes on the Pe-la, or insect wax of China: by Dr. MacGowan, Medical Missionary at Ningpo. Communicated by Dr. Coldstream. Although this singular substance has been largely used in China since the thirteenth century, and has been occasionally imported both into France and Britain for many years past, its natural history is still very imperfectly known. Its chemical properties were investigated in 1848 by Mr. B. C. Brodia, of London, who showed that, even as it is met with in commerce, it is nearly in a state of chemical purity, and that it most closely resembles *cerin*, the base of bees'-wax. The Pe-la is perfectly white, translucent, shining, not unctuous to the touch, inodorous, and insipid. It melts at 100° Fahrenheit. It is found adhering to the branches of certain shrubs, whence it is collected yearly in June. It seems to be produced by myriads of minute insects, which either excrete or are changed into, the wax. Dr. MacGowan is inclined to believe that the insect undergoes what may be called *aceroscous* degeneration, its whole body being permeated by the peculiar product, in the same manner as the *Coccus Cacti* is by *carmine*.

A seal, cut in figure-stone, and bearing, as its device, ancient Chinese characters expressive of the name of Müller, which had been forwarded from China by Dr. Mac

Gowan, for the purpose of being presented to Mr. Hugh Miller, as a mark of the esteem in which his geological labours are held by Christian cultivators of science in the far East, was here put into Mr. Miller's hands by Dr. Coldstream.

The Society then adjourned till the first Wednesday of February.

The Variegated Sole.—I have seen Mr. Hussey's note on the occurrence of the variegated sole on the Sussex coast (Zool. 3282), and as I know that the feeding-ground has a very great influence upon the sole, and have obtained specimens such as he describes, but which were not the variegated sole (*Monochirus linguatulus*), I send a few extracts from my note-book on the point. The true variegated sole I have never seen exceed $5\frac{1}{2}$ inches (French measure), and I have seen twenty pairs at a time, and not half an inch difference in the whole lot, and many of them had roe. They are called here bastard soles. Previously to procuring any at Weymouth, the fishermen told me of a second marketable sole, which they described as much thicker, and with larger scales than the common sole, and with black blotches on the back; this I thought must be the variegated sole, and I ordered them to bring the first they caught, which were about a foot in length, and as they were described, as to thickness of flesh, size of scales, and colour. This, however, was not the variegated sole,* but I have no doubt one of the same sort as that obtained by Mr. Hussey. I then made very full inquiries of many trawlers, and they all agreed in stating the colour of the sole depended upon and varied according to the quality and depth of the feeding-ground; and they named four prevailing varieties:—1, a dark sole; 2, a shrub sole, from the markings on the back having the appearance of shrubs; 3, a lemon sole; and 4, a spotted sole. No. 1 is, I believe, caught in the shallowest water; No. 2 next; and Nos. 3 and 4 in the deepest water. The black patches in the true variegated sole run in a transverse direction, and, on the fins, are in the shape of bars, and pretty regular both in size and distance from each other; in the other sole mentioned by Mr. Hussey, the blotches are very irregular in every way. In five specimens of the variegated sole which I purchased this morning, there are no black marks whatever on the body, which is reddish, with light markings, the fins however are barred with regular, black, transverse bands in the direction of the rays.—William Thompson; Weymouth, January 20, 1852.

Method of obtaining Trox sabulosus.—Time was, when the meeting with, upon our forest hills, a rabbit-skin or a bundle of old bones, was hailed with delight, as a treasure ever longed for but seldom met with, as "luck was not in 'em" if they did not hold a specimen or two of the far-famed and interesting *Trox sabulosus*. Now, like the man in the farce, who never had an idea of his own, it was not, until advised by my friend, George Guyon (well known in your pages), that I saw, by simply taking over and placing in favourable localities, a few skins and bottles of bones, how easily the above-mentioned casualty might be converted into a "dead certainty," and a good supply of *Trox* be readily procured. Accordingly, on my next trip, behold me with the pockets of my entomological coat standing out some half a yard from each side of my person, owing to the deposition therein of some half a dozen rabbit-skins, and two soda-water bottles partly filled with bones. Selecting suitable situations, I deposited

my skins, and burying my bottles up to their mouths, left the field. Upon returning a fortnight after to see the result of my experiment, judge of my delight when, on examining the skins, I had the lively satisfaction of extracting therefrom thirteen specimens of the much-desired *Trox*. Like the burying *Necrophori*, they had partly entombed the skins; and I would recommend any one laying similar traps, to well dig up the soil with their barking-knife or digger, and carefully examine it *beneath* the skins, as most of my specimens were taken from thence: they having gone thither and taken with them some choice morsel to be disposed of at leisure, in content and fancied security. Like the *Necrophori*, too, the *Trox* emits a peculiar squeaking sound when disturbed in its haunts. Having securely bottled my specimens of *Trox*, my attention was next directed to the buried bottles of bones. These I found completely filled with specimens of *Necrophorus humator* and *mortuorum*, *Oiceoptoma rugosa*, two species of *Ptomophagus*, several specimens of *Serica brunnea* (but rarely met with in this county), *Nitidulæ*, *Brachelytra* and *effluvia*.—*Fredk. Bates; King St., Leicester, January 23, 1852.*

Occurrence of Necrodes littoralis in considerable numbers.—Five years since last summer, as I was passing down a lane in the vicinity of this town, I saw stretched on the sward the remains of a horse that had perished in a pit hard by. It was afterwards cut up on the spot and the members taken away, their use being to stay the craving appetites of sundry of the canine species; the entrails only were left, and cast aside as worthless. The weather was excessively hot at the time; and in a few days, on revisiting the spot, I found the remains completely alive with a maggot or grub, about half an inch in length. But the dreadful effluvia arising prevented me from making any close examination. However, a day or two afterwards, I boldly advanced, determined at all risks to have an examination. I found it literally swarming with *Necrodes littoralis*, an insect I had never heard of before as occurring in this county. It was an exhilarating sight to see me, with beaming countenance, bending over these remains, puffing out huge volumes of smoke from my meerschaum, in order to keep the effluvia (not small I assure you) off my stomach; ever and anon diving with my fingers into the unctuous mass, to secure the *Necrodes* which were rolling and rollicking about, evidently luxuriating in their filthy feast. Having secured a sufficiency, and my pipe having expired, I left the remainder to the full enjoyment of their repast. Upon again visiting the spot a few days afterwards, both matter and life had entirely disappeared. Thus does Nature, by her ceaseless and ever-wakeful energy, preserve herself. Everywhere present are her myriad agencies, whose task it is to turn back into the great stream of life organic matter on the verge of dissolution. The great circle of life is complete and unbroken. Among my specimens of *Necrodes* were a number with the thighs of the hinder legs greatly enlarged. Can any one inform me the cause of this, as I have been led to understand they are not the males of the species, as I at first supposed? By what earthly sense were these insects guided, and from whence could come an army sufficient, in a few days, wholly to consume the entrails of a horse?—*Id.*

Occurrence of Carabus arvensis in Leicestershire.—On the 6th of April, 1850, I had the pleasure of capturing a fine and brilliant specimen of *Carabus arvensis*, roaming over the plain of Beacon, situate at the base of Beacon Hill, the first time, I believe, it has ever been met with in this county. The colours of this specimen are so singularly brilliant for the species, as to entitle it, in the opinion of Mr. Thomas Marshall, to the rank of a variety.—*Id.*

Remarks on the Fauna of Western Eskimaux-land.

By BEDFORD PIM, Lieut. R.N.*

THE polar bear (*Ursus maritimus*) sometimes attains the height of 9 feet, and inhabits the icebergs of the Arctic sea, preying upon the seal, which, with one blow of its powerful paw, it secures and destroys. The bear rarely, if ever, approaches human habitations, and the icebergs adjoining the coast of Asia appear to be its favourite resort. Man however finds the skin too useful to suffer the animal to remain in quiet. As even a musket-ball would flatten, and an arrow fail to arouse it from slumber, the natives have invented an ingenious artifice to secure it. A thick and strong piece of whalebone, about 4 inches broad and 2 feet long, is bent double; while in this state, some pieces of blubber are wrapped around it, and the contrivance taken into the open air, where a low temperature renders it hard and compact: it is now ready for use. The natives, being armed with bows and arrows, and taking the frozen mass with them, depart in quest of their prey. As soon as the animal is seen, one of the hunters deliberately discharges an arrow at it; the monster, feeling the insult, pursues the party, which is now in full retreat, but meeting with the frozen blubber, dropped expressly for it, swallows the lump. The chase, the exercise of running, and the natural heat of the inside, soon cause the dissolution of the blubber; the whalebone, thus freed from incumbrance, springs back to its old position, and makes such havoc with the intestines, that the beast discontinues the chase, and soon terminates its existence.

The other bears are comparatively diminutive. The most common is the brown bear (*Ursus Arcticus*), which inhabits the woods. The natives kill considerable numbers about Kotzebue's Sound; the animal is not seen much to the northward. It commits great depredations upon the Russian fishing-stations in Norton Sound, and is so daring and voracious that nothing save a well-directed shot puts an end to the mischief.

Not unlike the bear is the wolverine (*Ursus luscus*, Linn.), which is also limited to the woods, and rarely, if ever, seen to the northward of them. Its strength is prodigious, and, although small, it has been

* My friend, Lieut. B. Pim, has kindly permitted me to communicate to the 'Zoologist' the following extracts from his manuscript work, 'The Western Relief Expedition, its Objects and Results.'—*Berthold Seemann.*

known to drag an entire deer to its den. The natives never openly face it, but always resort to stratagem. It preys upon any animal that may fall in its way, indiscriminately making a meal from the reindeer or the mouse. Its skin is highly prized, and holds the first rank in Eskimaux currency.

The marten (*Mustela Martes*) appears to be an intermediate species between the sable of the Old and the marten of the New World; it partakes of the dark colour of the former, and thick soft fur of the latter, while the fur on the under part of the foot is a character common to both species. It does not extend its peregrinations beyond the limit of the woods; on the contrary, it appears to increase in size and number as it recedes from that boundary. The peninsula to the southward of Kotzebue's Sound abounds in it; and still further south, inland from Norton Sound, nearly all the natives have outer coats of its fur, which however are not considered so valuable as those of deer-skin. Of several hundred skins that I have seen, the colour was never entirely black.

The ermine (*Mustela Erminea*) also is common, and inhabits the banks of rivers. During the winter it possesses, like the Arctic hare, a white skin, with a black-tipped tail. It is occasionally trapped, though from the number required for a single dress, it is not often molested, and its skin, as an article of exchange, is considered of trifling value.

The otter (*Lutra Canadensis*) is highly prized and much sought after. Its skin is used as trimmings for dress, and bartered at a high price with the Russian traders.

The fox (*Canis vulgaris*) is of a bright red colour, and is principally found about the coast, where it obtains plenty of food throughout the year, by preying on the ptarmigan and hares. The Russians give a good price for the skin.

The white fox (*Canis lagopus*) so common on the Asiatic shores, is rarely seen.

Wolves are seldom seen alone, generally running down their prey in packs. They do not hesitate, if pressed by hunger, to attack a single individual, although, if two or three people are together, they are easily scared. Scarcely a winter passes without some of the natives being destroyed; this, their own assertions, and my personal knowledge, sufficiently testify. It is always necessary to be on the alert. I remember that it once fell to my lot to cook for the party to which I was attached; and, having prepared some venison steaks for my companions, I fell asleep. Some wolves, however, had been in the

vicinity all day, and kept better watch than myself. Upon awakening, I found to my surprise that the frying-pan was empty, and no remnants of the repast whatever were to be seen. Pursuit was hopeless, and my companions returning, they had to go supperless to sleep. The wolf-skin is much prized by the Eskimaux, and the animal itself is often caught for the purpose of crossing their dogs, and thus adding to their size and strength.

The lynx (*Felis rufa*) is scarce, but destructive to the deer. It takes its place among the branches of trees, and pounces upon its prey beneath. The skin, though the fur is very soft and thick, is not valuable, because it is remarkably thin. The flesh forms a dainty article of food, and is made into broth for the sick and aged, as chickens are with us.

The different species of seal in the Arctic sea are numerous, and form one of the necessities of life to the Eskimaux. Their flesh is an esteemed article of food, and their skins are used for various domestic purposes.

Of still greater importance is the morse or walrus (*Trichechus rosmarus*), without which the condition of the natives would be wretched indeed. Its skin forms the outer covering of their baidars and kayacks; from its tusks are made weapons, sledge-runners, and a variety of useful articles; and its flesh and blubber afford both food and light. Even to a European, the walrus-meat is not disagreeable. Captain Cook calls it marine beef; and on board the relief ships, soup made from it frequently appeared at table.

Rats and mice are numerous, and, as the aborigines put everything to some use, the former are trapped for their skins, the latter as food.

The marmots (*Aptomys Parri*) are abundant all along the coast: they are of a yellowish gray colour, inclining to russet. The skin is esteemed, forming, as it does, a warm covering. The marmots burrow in holes, and remain in a state of lethargy during the winter.

The beavers (*Castor Fiber*) are caught or trapped in numbers, and, like the marten and others, are found in greater abundance towards the south. The natives obtain a good price for the skins, which the Russians appear to consider the most lucrative branch of their fur trade, and import vast numbers into China, in exchange for tea.

The hare (*Lepus glacialis*) roams over the vast moorland, and several killed on Choris Peninsula averaged 14 lbs. in weight. During the winter they are entirely white, with the exception of the tips of the ears, which are black; but in the summer the colour changes, until in September it cannot be distinguished from that of the hares

of Europe. The skin serves as the inner coat of the Eskimaux, and surpasses all others in softness and warmth.

Remains of the antediluvian elephant are embedded in alluvial clay in several places along the coast. In Kotzebue's Sound was found the long black hair, together with a quantity of light brown dust, evidently decomposed animal matter. "The fossils are sometimes of great size; in 1848, eight tusks of the mammoth were collected, the largest of which, though broken at the point, was 11 feet 6 inches in length, 1 foot 9 inches in circumference at the base, and weighed 243 lbs. Molar teeth, thigh-bones, ribs, and other fragments of the elephant, together with a number of horse and deer bones, were disinterred; the whole emitting that peculiar smell encountered in burial-places."*

Of the whole Fauna perhaps no animal is better adapted to the country, or more useful to the inhabitants, than the reindeer (*Cervus Tarandus*). From its skin, clothing and tents are made; from its bones, arrow-heads, &c.; and from its sinews, bow-strings, thread, &c.; while its flesh forms a most nutritious food. The teeth are used as ornaments by the women, and the horns converted into handles and the heads of darts. The reindeer is migratory, proceeding to the northward when the snow melts, and returning southward when the frosts of winter render the Arctic steppes uninhabitable. The migrations southward extend little beyond Norton Sound. The reindeer are very tenacious of life, and, unless hit in a vital part, they are not even stopped in their career by a musket-ball. The hunter sometimes exhausts his whole quiver of arrows before he secures his prey. There is, however, a quicker method of attaining the end. The natives make a semicircular pound, of stakes driven into the ground, and affix to it nooses of walrus-hide; the animals are at first gently driven towards them, and then, frightened by loud outcries, they rush headlong to destruction.

Porpoises are seldom seen, but they seem to be replaced by white whales, which are a little larger. In June and the beginning of July they are taken in considerable numbers; during the rest of the summer they are not approachable. There are, besides, the Greenland whale, the spittle-back, and the finner. Many whale-ships have been attracted in consequence, and they number as many as a hundred. Each vessel is capable of containing about 3,500 barrels of oil; and as whales generally yield from 40 to 50 barrels each, it is necessary to capture at least 85 to obtain a full cargo. The effect of this slaugh-

* M. B. Seemann's Private Journal.

ter is already apparent, and the ships have to enter the icy masses in order to drag their prey from its last refuge; but even there success does not always attend their efforts.

The black crow and the ptarmigan are the only birds that remain in the Arctic regions throughout both the summer and winter seasons. The crow is supposed by the natives to have been the maker of the universe; but this belief does not induce any veneration, on the contrary, the bird was frequently pointed out as a fit mark to fire at. The ptarmigans change their plumage every month, and approach nearest to white in December; but after that time the tail, wings and head gradually become black, until in June the feathers assume a brownish red. In April the ptarmigans begin to pair, and during that time they have a peculiar cry, sounding almost like our "go back, go back."

As the month of May advances, and diffuses warmth around, flocks of geese, gulls, divers, puffins, shags, and swans, quickly followed by ducks, teal, and wigeon, spread themselves over the country. The smaller birds, such as owls, snipes, plovers, curlews and sparrows, appear to spring from the ground, and their nests are soon to be found in every direction. The number of birds is very great, as they are seldom frightened, or, with the exception of the ptarmigan, snared by the natives.

Western Eskimaux-land, like the "Land of the West," is free from every description of reptile, though St. Patrick has never visited it.

Many varieties of fish abound in rivers. Salmon, so frequent in Norton Sound, are not found to the northward of the Buckland; they appear however to be superseded by the mullet, which obtains a considerable size. Herrings and whiting are caught in Hotham Inlet in great quantities, and some of the smaller streams produce a few trout.

An immense number of shells, star-fish, crabs, shrimps, and Radiata, occur in the Arctic sea; the beach also, in some places, is strewn with mussels; of land shells, only a single species seems to prevail.

Insects are few in proportion to the rest of the Fauna. A species of butterfly, a bee, two beetles of a black colour, a jumping spider, and the mosquito, may be considered to comprise the whole; the latter, however, makes up for the paucity of other insects. "In the tropics," says Mr. B. Seemann,* "mosquitoes are often troublesome, but in the worst mangrove-swamps I have never seen them so numerous as in the northern regions: indeed, they tormented me so much, that

† In Hooker's Journal.

the blood was actually streaming from every unprotected part of my body. The tropical mosquitoes are small and swift, and although it generally proves a vain attempt to kill them, yet they may be driven away. Far different are these northern ones. They are much larger, sluggish in their movements, and, after having once taken up their position, they are with difficulty frightened. Fifty to a hundred may be destroyed by a single dash of the hand; yet all is of no avail: their places are instantly occupied by fresh recruits, and at last a person becomes so fatigued, after so many unsuccessful attempts to free himself from his tormentors, that he is obliged to give up killing them in despair, and submit patiently to their irritating operations."

The only domestic animal is the Eskimaux dog, which, according to some naturalists, is merely to be considered as a tame wolf. The resemblance between the two is indeed striking. Both have the same low melancholy howl, and, although the head and ears of the dog are shorter, its eyes smaller and more sunk, its tail handsomely curled over the back, its paws smaller and less spread, and its colour of every hue, yet these distinctions are not sufficiently characteristic to raise it to the rank of a separate species. The natives are very proud of their dogs, and some of the principal men have teams corresponding in colour and size, as a wealthy European would have his horses. The dogs are employed for no other purpose than that of drawing the sledges and baidars. While yet puppies they are placed in harness, and thus early accustomed to the labour they are to perform. When tied to sledge they evince their joy by the wildest antics, and set off at a quick pace, which, however, soon changes to a steady trot. The females are seldom used for draught, and only a few kept for breeding. The dogs, upon scenting, will start in full pursuit, but unless driven by hunger never attack the deer. The natives treat them with kindness and attention, and never use harsh measures; a word is generally sufficient to quicken their pace or bring them to a halt. The women even go so far as to chew the food for the pups, and give them a share of the furs. This treatment, indeed, differs essentially from that inflicted by the Tchukchies, on the north-eastern shores of Asia, who guide and beat their dogs most unmercifully.

BEDFORD PIM, Lieut. R.N.

January, 1852.

Excursion to Botany Bay, New South Wales.

By JOHN MACGILLIVRAY, Esq.

WITH the name of Botany Bay most people in England still associate the ideas of felony and transportation, unaware that it has never been directly associated, to any considerable extent, with the annals of crime. My object, however, is not to enter upon such a subject ; but merely to narrate an excursion made to the place, in quest of objects of Natural History.

Leaving Sydney one fine morning in December—the height of the Australian summer—a walk of five miles brought me to the waters of the bay, upon its northern shore, where, by the way, the shade of Sir Joseph Banks would be surprized to find his name blazoned forth in large letters upon the sign-board of an hotel, well known to the good folks of Sydney. The intervening country is a tract of low sandy ground, covered with bushes, with numerous swamps and lagoons of fresh water towards the east, where the rising ground suddenly ends in a line of bold sandstone cliffs, the base of which is chafed by the waves of the Pacific. Over this district the variety of flowering shrubs and other plants, although considerable, is yet not sufficiently striking to remind one that to this the place is indebted for the name bestowed upon it by its discoverers. Perhaps the most remarkable of these is the curious *Xanthorrhæa hastilis*, or grass-tree, with tall spear-like flower-stalks, eight feet high, springing from the centre of a great tuft of grass-like leaves arching over a bare supporting trunk. But the finest show is made by the white and pink heath-like kinds of *Epacris*, and the purple-blossomed *Boroniæ*—both among the well-known attractions of the English greenhouses. Yet botanizing here is not altogether unattended with danger, for snakes are still abundant in the swamps, although within a few miles only of a city containing 50,000 inhabitants. Once I nearly trod upon a carpet-snake (*Morelia variegata*), fortunately a harmless kind ; and soon afterwards killed another, the “black snake” of the colonists (*Acanthophis Tortor*), the bite of which is reputed to be highly poisonous.

Scarcely any of this tract of land is fit for cultivation. It extends from Port Jackson to Botany Bay in one direction, and, in the other, stretches westward from the coast, intersected by more or less continuous sand hills, the boundaries of numerous swamps. These marshes harbour very few birds. Occasionally one starts a snipe (*Scolopax Hardwickii*), or the beautiful swamp parrakeet (*Pezoporus formosus*),

from among the long grass and rushes. No lacustrine shells occur, I believe, although often diligently searched for. The sand hills are overgrown with species of *Leptospermum* and *Epacris*, and small *Banksiæ* and *Eucalypti*. The birds there are chiefly the well-known *Meliphagidæ* or honey-suckers, *Meliphaga Novæ-Hollandiæ*, *Glyciphila fulvifrons*, *G. albifrons*, and *Acanthorhynchus tenuirostris*, with two beautiful *Maluri*, *M. cyaneus* and *M. Lamberti*.

The carcase of a horse by the road-side furnished several carrion beetles — *Emus erythrocephalus*, *Ptomaphila lachrymosa*, a brilliant *Hister*, and a blue *Necrobia*; and on the *Leptospermum* we found the beautiful *Cyria imperialis*, *Stigmodera macularia*, and *Chrysolophus spectabilis*, the last in considerable abundance. The wooden fences everywhere harbour a great cockroach (*Kakerlac* — ?); and from the small gum-trees, feeding upon the leaves, I shook down *Anoplognathus viridi-æneus*, *A. analis*, *A. Olivieri*, &c., in great numbers, and some of these trees in flower furnished *Temognatha variabilis*, and one or two specimens of *T. grandis*, besides many *Cetoniadæ*, — *Diaphonia dorsalis*, *D. frontalis*, *Eupœcila Australasiæ*, *Eu. punctulata*, &c.

The upper part of Botany Bay contains extensive mud-flats, partially dry at low water, covered with meadows of *Zostera marina*, and fringed in places with mangroves. These flats are covered with *Cerithium ebinum* and *Arca trapezia*, two shells which supply most of the lime used in the colony; they also constitute the feeding-grounds of numerous herons (*Ardea Novæ-Hollandiæ*), curlews (*Numenius Australasiæ*), and other waders.

Having reached the south headland of the bay, let me ask the reader to allow me to put aside Zoology for a while, and take a retrospective glance at the important events of which this has been the scene: for we are now upon classic ground, such, at least, as a colony like this can exhibit. It is now eighty-one years since our illustrious navigator Cook dropped anchor in the bay; and by the aid of the telescope you may see a brass plate fixed to a rock on the opposite shore, commemorating this event. There the first white men landed, and there the party of forty from the *Endeavour* were opposed by a single native, who manfully withstood for a time the supposed hostile invaders of his country. A few years pass by, and the quiet waters of the bay are enlivened by the presence of eleven sail of vessels, with upwards of 800 convicts on board. But no place was here found suitable for the reception of so large a party; and fortunate was it that in the neighbouring Port Jackson, a few miles to the northward, a noble harbour was discovered, on the shores of which the first British set-

tlement in Australia was founded on January 26, 1788. On the very day when the "first fleet" was leaving for Port Jackson, two French discovery-ships (*La Boussole* and *L'Astrolabe*), under the unfortunate Lapeyrouse, put in here; and that tall column near us reminds one that here this ill-fated expedition was last seen by Europeans, and for a long time its fate remained a mystery. Here too is the lonely tomb of the Abbé Receveur, one of Lapeyrouse's naturalists, who died at this place, of wounds received from the natives of the Navigator Islands.

What has become, you naturally ask, of the once numerous tribe of aborigines of which these shores were once the home, and these waters the fishing-grounds? Their doom has been worked out,—is the answer,—not one now remains. The last of his race—his name was Marút, and I knew him well—died in Sydney two years ago. He was much attached to the scenes of his younger days, and felt his own desolate condition. A friend of mine was once walking on the sands of Botany soon after sunrise, when this "last man" suddenly came from the skirting thickets and joined him. "This all my country" said he, making a large sweep with his extended arm,—“Nice country this—My father chief long time ago, now I chief.—Water all pretty, sun make it light. When I little fellow, plenty black fellow, plenty jins, plenty piccaninny, great corrobory, plenty fight. Eh! all gone now and (pointing his forefinger to the ground) *all gone Sir, only me left to walk about!*”

But I am forgetting that we are upon a zoological excursion, and have yet to visit Bondy Bay, a short distance to the northward. On the sandy beach are numerous *Janthinæ*, *Velellæ*, and *Physaliæ* cast up by a recent westerly gale, together with shells of *Spirulæ*, and dead mutton-birds (*Puffinus brevicaudus*). *Cicindela Upsilon* is plentiful on the sand, but difficult of capture.

On the rocky headlands of Bondy Bay I found about a dozen species of shells—a large *Chiton*, *Haliotis nævosa*, *Ricinula tuberculata*, *Turbo undulatus*, *T. versicolor*, *Parmophorus Novæ-Hollandiæ*, &c., and on the rocks reached occasionally by the spray, *Planaxis mollis*, *Littorina Mauritiana* and *L. pyramidalis*. The pools contained black *Echini* of two species, and several *Asteriadæ*. I was amused with watching two cuttlefishes (*Octopus*); the rapidity of their movements surprized me, as did the ferocity with which one pounced upon an unfortunate crab. Another inmate of the pools is the snake-like *Muræna prasina*, which bites savagely at a stick presented to it, and is secured with difficulty. Numbers of a flat variegated crab (*Grapsus rudis*)

were running about the rocks—with equal facility up and down perpendicular and overhanging surfaces—betaking themselves to the fissures and recesses as soon as I approached: in fact even by looking over a rock all the crabs below took to flight.

On the flat summits of the sandstone cliffs are numerous specimens of rude carving of the aborigines representing sharks, porpoises, kangaroos, &c. Descending by a narrow path, I fished from the rocks with considerable success, having caught several species of *Serranus*, *Julis*, &c. In a small wood not far off I shot a “coachman” (*Psophodes crepitans*), and many of *Anthochaera mellivora*—the latter feeding on the insects in the *Banksia* flowers. Some *Eucalypti* in blossom were frequented by numbers of parakeets—*Trichoglossus Swainsonii* and *T. concinnus*—besides many fine beetles. I dined here in a shady hollow, to the accompaniment of music—such as it was—to the heart’s content: for the trunks and branches of the trees around harboured numbers of “locusts,” as the colonists call them. In like manner they have anglicized *Angophora* by “apple-tree,” *Casuarina* by “she-oak,” *Banksia* by “honey-suckle,” *Exocarpus* by “cherry,” &c.; and they are not content with calling the large flat spiders of the genus *Linyphia*—common under bark—by the erroneous name “tarantula,” but some have further corrupted the word to “triantalope.” But, to return to the locusts, they are large *Cicadidæ*, of which the commonest is the green *Cyclochila Australasiæ*, and next to that several species of *Fidicina*, and the fine *Thopha saccata*.

JOHN MACGILLIVRAY.

January, 1852.

On the Song of Birds.—The song of birds seems to be guided by different motives; some birds sing only at the time of pairing and nestling, others at broken periods nearly all the year round. I have watched them very closely lately, and find that the weather has a good deal to do with it. The winter of 1850-51 was remarkably mild: in November, 1850, the temperature for the first fourteen days ranged from 48 to 58, with fine, calm, clear weather; in the middle of that month the skylarks were soaring as they do in spring, and singing quite out. I noticed a sparrow carrying feathers under the eaves of a dwelling-house at the same period. In the beginning of August, 1851, the thrushes in my neighbourhood ceased singing; from that time until the 20th of October—a splendid autumnal day—I heard no thrush sing; but on that day four or five commenced their song for a day. I heard no more until the 8th of December, when

“The mavis thrush with wild delight,
Upon the orchard’s dripping tree,
Mutters, to see the day so bright,
Fragments of young hope’s poesy.”

They have continued with little intermission ever since, a pretty sure sign that no severe frost is very near.

"Sing on, sweet thrush, upon the leafless bough ;

Sing on, sweet bird, I listen to thy strain :

See, aged winter, 'mid his surly reign,

At thy blithe carol clears his furrow'd brow."—*Burns*.

On the 8th, 9th, and 10th of December, I heard the plaintive carol of the missel-thrush, and only once afterwards, about the 20th. That cormorant of the fruit-garden, the blackbird, seldom begins his song here much before the middle of April. I remember, when a boy, taking a blackbird's nest ; the old birds followed me with their "pink, pink," in great distress ; in a few minutes the cock went, as if for the last time, to the spot where the nest had been, he then darted up to the top of a tree, and commenced a beautiful dirge for the loss of his young. His sweet notes made me bitterly repent the robbery I had committed ; I never heard a bird sing so beautifully. A correspondent in the '*Zoologist*' for 1844, mentions the curious superstition in Scotland about the yellow-hammer (which is quite true), and that this poor innocent bird has to do with the "de'il." His unmeaning song is twisted thus :—

"Teedle eedle eedle eedle ye,

De'il take you and not take me."

I am of opinion that birds sometimes mistake moonlight for dawn. Several times about the end of May and beginning of June, I have heard the cuckoo at midnight, in my shrubberies, within fifty yards of my house ; and, at the same time, that pretty lively songster the black-cap. It has a pleasing effect when the listener is in bed. The song of the nightingale is very short. In cold ungenial weather this bird never sings out well. In the winterly months of May, 1837 and 1838, they sang scarcely at all, and I never heard them after the 15th of June, but they have been partially heard until the first week in July : the majority cease singing out about the 10th of June, after the hatching of their young. In travelling in France, by diligence, the conveyance stopped near a wood, and I believe I heard fifty of these birds singing within 200 or 300 yards of the post-house : the effect was beautiful ! The great variety of song among the numerous choristers of the grove, is quite charming, both by day and night, in May and June ; and to me even the cooing of the wood-pigeon is a pleasing sound. A nocturnal friend visits me often, not quite so pleasing as the nightingale, indeed, and generally in the winter nights, to wit, a fine white owl. I often wonder, when his wild "who," "who," meets my ears, how he can subsist in severe weather at all ! Byron does not let the song of birds pass unnoticed :—

"Sweet the song of birds,

The lisp of children, and their earliest words."

A heart-stirring simile no doubt ! I fear I have tired some of your readers with my long yarn. At present no flower but the snow-drop appears, "nursed in the storm" and "cradled in the winds ;" but we must soon look forward to a full chorus of songsters with the lengthening days and opening flowers. Indeed, whilst I am writing, with the thermometer at 52 in the shade, there is a full chorus of song-thrushes, with the hedge-sparrow, the cole titmouse, the lively little wren and the chaffinch.—*H. W. Newman ; New House, Stroud, February 3, 1852.*

Occurrence of the Common Buzzard (Buteo vulgaris) at Brede, Sussex.—I recently obtained two specimens of this bird, which were trapped at Brede in the beginning of the present month. It is so scarce now, that I do not know of more than a dozen spe-

cimens having been obtained in this county during the last twenty years.—*J. B. Ellman* ; *Lewes*, January 28, 1852.

Occurrence of the Great Gray Shrike at Hailsham.—I last week obtained a pair of this bird (which is very scarce so far south) from the above place. They were procured last summer.—*Id.* ; *February* 19, 1852.

Note on the Kite and Buzzard Trapped at Blenheim.—It may interest some of the readers of the 'Zoologist' to know that the kite and buzzard mentioned by Mr. Webb, on the cover of the February No., as having been trapped at Blenheim, are now alive in my possession, and though they have only one leg each, appear perfectly well. A very fine young female peregrine falcon was also shot in Blenheim Park about the beginning of last November.—*T. L. Powys* ; *Christ Church, Oxford*, February 11, 1852.

The Redstart.—I am quite aware of the force of Mr. Hulke's observations on the redstart (Zool. 3329). In mentioning this bird as of a delicate and wild nature, I only alluded to the case of disturbing its nest. In the few instances in which I have moved the beautiful blue eggs of the redstart, or disarranged the nest, by thrusting my hand into the wall or hole where it was, and examining the eggs in my hand, I have found the bird to forsake the nest. I mentioned the parallel of the hedge-sparrow, which will suffer all this in its nest, and still continue to sit. The eggs of these two birds are very much alike, and you might deceive the hedge-sparrow but not the redstart. The redstart frequents cities and towns, and there is scarcely a parish where one or more couples may not be seen. But while on the subject of deceiving birds, is it not extraordinary how that monster of the feathered tribe, the cuckoo, imposes her large egg on the hedge-sparrow, wagtail, and others, and has her young one hatched, barring accident, to the exclusion of the nursing mother's eggs entirely? The finger of Providence is certainly here! — *H. W. Newman* ; *February* 7, 1852.

Occurrence of the Fire-crested Regulus near Penzance.—Another specimen of this bird has lately come to hand. It is a male bird, and was observed in a hedge singly, about a mile from this place. The crest is less bright than in some specimens that I have seen ; perhaps it may be a last year's bird. — *Edward Hearle Rodd* ; *Penzance*, January 28, 1852.

Note on a wild Hybrid between the Greenfinch and Linnet.—My neighbour, Mr. Edward Fountaine, of this parish, has a specimen of a hybrid bird between the greenfinch and the common linnet, which he caught in a wild state some time since, and which, on that account, I think deserving of a record in the 'Zoologist.' — *J. H. Gurney* ; *Easton*, January 29, 1852.

Note on the Sandpiper described by Mr. Reid.—I beg to suggest that the sandpiper described in the last number (Zool. 3330), appears to accord with Bartram's sandpiper (*Totanus Bartramia*), an American species, which has been noticed as occasionally occurring on the continent of Europe, but which, I believe, has not hitherto been observed in Great Britain.—*Id.*

[Mr. A. G. More has previously made the same suggestion on the wrapper of the last number : I should much like to submit the bird to Mr. Doubleday, Mr. Gould, Mr. Yarrell, or Mr. Gurney.—*E. N.*]

Occurrence of Ross's Rosy Gull (Larus Rossii) at Pevensey, Sussex.—I have recently received a very beautiful adult male specimen of this bird, which was shot by my friend Mr. Vidler, of the above place, who kindly presented it to me. Since the publication of the 2nd Edition of 'The Rambles,' in 1850, twelve additional species of birds have been obtained in this county ; nine of these are in my possession.—*J. B. Ellman* ; 21, Great Percy Street, Pentonville, February 19, 1852.

Curious Propensity of a Toad.—In April, 1851, whilst digging in my garden, I turned up from a depth of five or six inches, a living toad and a dead frog. The mouth and front of the head of the toad being covered with gory matter, I thought I had cut it with the spade, but observing it to move off without showing any signs of injury, I was induced to examine it and found it unhurt. I then examined the frog, and found it in a state of partial decomposition, with much of its fleshy substance removed. It was therefore clear that the toad had been feasting upon the frog, and its plump appearance indicated the same conclusion. Five weeks previously I had dug over the same piece of ground, when neither frog nor toad was there. Toads we know will bury themselves in the ground, but I am not aware that frogs do; and if not, the frog could not have died there; and the question is, did the toad kill the frog?—or, having found it dead, had the toad instinct enough to bury it, and thus reduce it to a state fitted for its own food? It could not, I apprehend, suck off the flesh whilst in a fresh state, and, if left exposed to the sun and air at that season of the year, it would soon have become dried up. These facts may or may not throw new light upon the economy of the toad, and therefore, if irrelevant, I can only apologize to the readers of the ‘Zoologist.’—*William Turner; Barholme Vicarage, Stamford, January 30, 1852.*

Name of Chesil Bank.—Were it not that the Chesil Bank is so favourite a place of resort for the British Coleopterist, it would not be worth while pointing out a slight error into which the Rev. J. P. Bartlett has fallen, in his interesting paper on “Captures of Coleopterous Insects” (Zool. 3354). It is, however, well that every pilgrim to that rich locality should know the name Chesil is *not* of foreign extraction, but is, on the contrary, almost a pure old English word. *Ceosel* or *ceosl* was the term used by our Anglo-Saxon forefathers for gravel or sand, and *ceosel-stan* for a pebble-stone. *Cheselys*—pebbles on the sea-shore—occurs, it is said, in the ‘Coventry Mysteries.’ The word has, notwithstanding, now almost entirely disappeared from our language, others having usurped its place. Johnson and Webster preserve only *chessom*, “sandy earth,” and *cheslip* “a small vermin that lies underneath stones.” The Saxons of Wessex no doubt gave to the locality in question the name *Ceosel-banc*, which has been at length corrupted into Chesil-bank. The Germans derive their words *kies*, gravel, and *kiesel*, a pebble, through a cognate branch of the Teutonic dialect. The original High German name for gravel was *kis*, from which they formed *kisil* and *kisili*, or *chisili* and their diminutives *kisilinc* and *chisiling*, the whole of these words having for meaning coarser or finer gravel and pebbles. The Latin word *cos*, a whetstone, and the Bohemian *kyz*, having the same signification; the Dutch *kei* and *heisteen*, a pebble, and possibly the Spanish *cascajo*, a heap of small stones, are only modifications of the same widely spread words, and which no doubt had a common origin in some Sanscrit root. The search for this primeval relic I would recommend to those having leisure and opportunity, and who may with propriety entertain the notion that the occasional hunt after some antique root buried in musty old tomes, is sport as exhilarating as groping on a raw November day for *Cheslips* amid the stones and sandy flats of Chesil-bank.—*Edwin Brown; Burton-on Trent, February 7, 1852.*

Land and Fresh-water Mollusca of the Neighbourhood of Nottingham.

By EDWARD JOSEPH LOWE, Esq., F.R.A.S., &c. *

WATER SHELLS, (*Univalves*).

Neritina fluviatilis. Abundant in the river Trent near Beeston and near Nottingham, and in the river Soar near Thrumpton.

Paludina achatina. Common at Thrumpton in the river Soar, in the river Trent below Nottingham, and in the Lenton canal.

Bithinia tentaculata. Swarms in a stagnant ditch near Lenton Priory, common in most ditches at Lenton, in a clear brook at Beeston and another at Attenborough, in the river Trent and tributaries to that river near Beeston and Sawley, and also under the Seven Arches in Nottingham Meadows.

B. ventricosa. Only found in a narrow ditch near the railway at Lenton, where it is tolerably abundant, and under the Seven Arches in Nottingham Meadows.

Valvata piscinalis. Abundant in brooks at Beeston, Lenton, and Bulwell, and in the river Trent near Beeston.

V. cristata. In rare numbers in a brook on Bulwell Bogs.

Succinea putris. Rather abundant at Thrumpton.

S. Pfeifferi. Common at Sawley and near Highfield House, and found between Beeston and Attenborough.

Limneus auricularius. Abundant in the Musco-Sic dike near Highfield House; found at Lenton, Beeston, Attenborough, and Sawley.

L. pereger. Very abundant at Lenton, Beeston, Attenborough, Sawley, Bulwell, Thrumpton, Highfield House, and Nottingham Meadows.

L. stagnalis. Abundant in a dike at Lenton, a dike at Attenborough, a mill-dam at Bulwell, a backwater at Sawley (called the "Old Trent"), and in few numbers in the river Trent near Beeston, and a stagnant ditch between Beeston and Attenborough.

L. palustris. Abundant on moist mud at Sawley and near the railway at Thrumpton, and very large in a stagnant ditch between Beeston and Attenborough.

L. truncatulus. Rare, in a ditch at Lenton and under the Seven Arches in the Nottingham Meadows.

Ancylus fluviatilis. Tolerably abundant in clear dikes at Highfield House, Attenborough, Bulwell and Oxtun, and at the mouth of a well at Newstead Abbey.

* From the 'Proceedings of the Linnean Society,' No. xlv., p. 117.

Valletia lacustris. Tolerably abundant in a small ditch at Lenton near the railway, and under the Seven Arches in Nottingham Meadows.

Physa fontinalis. Abundant in dikes at Lenton and Attenborough, the canal at Lenton and a pond at Wollaton, and in small numbers in the Musco-Sic brook near Beeston.

P. acuta (of Sowerby). Abundant in the river Trent at Beeston and Attenborough, rare in a brook on Oxton Bogs, in the canal at Lenton, and in a ditch between Beeston and Attenborough.

Aplexus hypnorum. Abundant in a dike at Beeston and rare in a ditch near the Beeston railway station.

Segmentina lineata. Rare in a brook on Oxton Bogs.

Planorbis corneus. Very abundant in brooks at Lenton, Beeston, Bulwell, Sawley, Attenborough, &c.

P. carinatus. Very abundant in brooks at Lenton, Beeston, Bulwell, and Attenborough, in the river Trent at Beeston, and under the Seven Arches in Nottingham Meadows.

P. marginatus. Abundant in dikes at Beeston, and of large size in a stagnant ditch between Beeston and Attenborough.

P. vortex. Very abundant in the river Trent, and in dikes at Beeston, Lenton and Attenborough, and under the Seven Arches in Nottingham Meadows.

P. spirorbis. Abundant in the river Trent at Beeston, and in dikes at Beeston, Lenton, and Attenborough.

P. albus. In few numbers in the river Trent near Beeston.

P. contortus. Not common on the bogs at Bulwell, and rare in a ditch at Lenton.

P. imbricatus. Not common on dead leaves in the lake at Highfield House.

P. nitidus. Rare in the lake at Highfield House, and in a pond at Wollaton.

(*Bivalves*).

Cyclas rivicola. Rather abundant in the river Trent near Beeston, and in the river Soar at Thrumpton.

C. cornea. Very common in the river Trent near Beeston, and in brooks at Lenton, Beeston, Attenborough, Bulwell, and Highfield House, and under the Seven Arches in Nottingham Meadows.

C. lacustris. Very abundant in a brook at Beeston, and another at Highfield House.

Pisidium amnicum. Abundant in the river Trent at Beeston, in a ditch near Beeston railway-station, and in a brook at Beeston.

Anodon cygneus. Abundant in the lake at Highfield House, in the Old Trent at Sawley, and in mill-dams at Bulwell.

A. cellensis. Abundant in the lake at Highfield House, and in the river Trent near Beeston.

A. anatinus. Abundant in the lake at Highfield House, a stream and canal at Lenton, and the rivers Trent and Soar.

A. avonensis. Rare in the river Trent near Beeston.

A. anatinus, var. (very ventricose). In the lake at Highfield House.

Unio pictorum. Common in the lake at Highfield House, the river Trent at Beeston and Sawley, and the river Soar at Thrumpton.

U. tumidus. Not uncommon in the river Trent near Beeston, and rare in the lake at Highfield House.

U. ovalis. Found in the lake at Highfield House and in the river Trent at Beeston.

U. Deshayesii, (if a var.) Not common in the river Trent near Beeston.

Dreissena polymorpha. Very common and large in the lake at Highfield House, common in the canal at Lenton (where it is small), the river Soar at Thrumpton, and a pond at Wollaton, and in few numbers in the river Trent near Beeston.

LAND SHELLS.

Helix aspersa. Very common at Beeston and around Nottingham.

H. hortensis. Rare at Bulwell.

H. nemoralis. Very abundant in most hedges.

H. hybrida (if a var.) Rare at Highfield House.

H. arbustorum. Rare at Thrumpton, Sawley, and Highfield House.

H. pulchella. Tolerably abundant at Highfield House, rare at Beeston and Oxtou.

H. fulva. Not uncommon at the foot of a hill at Thrumpton, rare at Highfield House, Oxtou, and Stanton-on-the-Wolds.

H. hispidula. Common at Nottingham Castle, Beeston, Bulwell, Sawley, Oxtou, Highfield House, Thrumpton, Stanton-on-the-Wolds, &c.

H. concinna. Tolerably abundant at Highfield House, and found at Stanton-on-the-Wolds.

H. depilata. Found in small numbers at Stanton-on-the-Wolds.

H. sericea. Rare at Bulwell, Oxtou, and Stanton-on-the-Wolds.

H. virgata. Rare at Stanton-on-the-Wolds and at Highfield House.

H. ericetorum. Abundant at Stanton-on-the-Wolds.

H. rotundata. Very common at Highfield House and Nottingham Castle, and found at Bulwell.

Helix alliaria. Not abundant at Sawley and Thrumpton.

H. cellaria. Abundant at Nottingham Castle, Sawley, and Highfield House.

H. aculeata. Rather rare under decayed leaves, at Highfield House and Stanton-on-the-Wolds.

H. caperata. Very abundant at Stanton-on-the-Wolds in one field, but not found elsewhere.

H. crystallina. Not abundant at Highfield House, Bulwell and Oxtun.

H. granulata. Rare on Bulwell Forest.

H. lucida. Not common at Bulwell, Oxtun, Highfield House and Stanton-on-the Wolds.

H. nitidula. Rare at Bulwell and Oxtun.

H. pura. Rare at Oxtun.

H. pygmæa. Rare at Highfield House and Stanton-on-the-Wolds.

Vitrina pellucida. Common at Oxtun, both on the warren and on the bogs, less abundant at Highfield House, Beeston, Bulwell, and Stanton-on-the-Wolds.

Carychium minimum. Tolerably abundant under leaves at Highfield House, Bulwell, Beeston, and Stanton-on-the-Wolds.

Bulimus obscurus. Abundant at Nottingham Castle and Highfield House.

B. lubricus. Common at Highfield House, Sawley, and Thrumpton, and found at Bulwell, Oxtun, and Stanton-on-the-Wolds.

Azeca tridens. Rare at Highfield House.

Pupa umbilicata. Very abundant at Nottingham Castle and at Highfield House.

Clausilia nigricans. Exceedingly common at Thrumpton, Bulwell, and Highfield House.

The following Mollusca are to be found associated together in the same localities : —

A dike running at the foot of Beeston, and passing behind the lake at Highfield House, contains, where it passes through Mr. Barker's field, the following shells : *Planorbis corneus*, *P. marginatus*, *P. carinatus*, *P. vortex*, *P. spirorbis*, *Limneus pereger* and *Aplexus hypnorum*. The dike is choked with weeds and filth from the village, and warm water from a neighbouring mill here runs into it ; *P. corneus* is found much larger in this warm dike than elsewhere in this neighbourhood : 200 yards lower down the dike contains (where it runs through the Rev. J. Wolley's fields), besides the above *Planorbis* tribe, *Cyclas lacustris*, *Limneus auricularius*, *L. pereger*, *Pisidium pulchellum*, and *Valvata cristata*. A few hundred yards beyond this the wa-

ter becomes free of weeds and clear, and the whole tribe of *Planorbis* are left behind. From Broadgate, all through the Highfield House estate, the dike only contains *Limneus pereger*, and, in one or two places, *Ancylus fluviatilis*, and on the moist mud on its banks, *Succinea Pfeifferi* and *Limneus truncatulus*. The Musco-Sic brook branches out from it at Broadgate, and joins it again at the east extremity of the Highfield House estate; this brook at first contains *Planorbis marginatus*, *P. vortex*, *P. carinatus*, *P. corneus*, *Bithinia tentaculata* (very large), *Valvata piscinalis*, *Limneus pereger*, *Cyclas cornea*, *Pisidium pulchellum*, and *Limneus auricularius*.

A very clear brook at Attenborough, with Algæ growing in it, contains *Planorbis corneus*, *P. carinatus*, *P. marginatus*, *P. vortex*, *P. spirorbis*, *Ancylus fluviatilis*, *Bithinia tentaculata*, *Limneus pereger*, *L. auricularius*, *L. stagnalis*, and *Physa acuta*.

A similar brook at Lenton, near the railway, contains *Planorbis corneus*, *P. vortex*, *P. spirorbis*, *P. carinatus*, *Limneus stagnalis*, *L. auricularius*, *L. pereger*, *Physa acuta*, *P. fontinalis*, *Valvata piscinalis*, *Cyclas cornea*, and *Bithinia tentaculata*.

A small ditch, some fifty yards from the last-named locality, contains *Bithinia ventricosa*, *B. tentaculata*, *Limneus truncatulus*, *L. pereger*, *Valletia lacustris*, *Planorbis vortex*, *P. spirorbis*, *P. carinatus*, and *P. contortus*.

The lake at Highfield House contains *Anodon cygneus*, *A. cellensis*, *A. anatinus*, a var. of *A. anatinus*, *Unio pictorum*, *U. tumidus*, *Dreissena polymorpha* (very large), *Planorbis nitidus*, *P. imbricatus*, and *Limneus pereger*.

The river Soar at Thrumpton contains *Cyclas rivicola*, *C. cornea*, *Unio pictorum*, *Dreissena polymorpha*, *Anodon cygneus*, *A. anatinus*, *Limneus pereger*, *L. stagnalis*, and *Paludina achatina*.

The river Trent near Beeston contains *Pisidium pulchellum*, *Anodon anatinus*, *A. avonensis*, *A. cygneus*, *Cyclas cornea*, *C. rivicola*, *Bithinia tentaculata*, *Limneus pereger*, *L. stagnalis*, *Physa acuta*, *Neritina fluviatilis*, *Planorbis carinatus*, *P. vortex*, *P. spirorbis*, *P. albus*, *Unio pictorum*, *U. tumidus*, *U. ovalis*, *Limneus palustris*, *Valvata piscinalis*, and *Dreissena polymorpha*.

Under the Seven Arches in Nottingham Meadows are *Planorbis carinatus*, *P. spirorbis*, *P. vortex*, *Bithynia ventricosa*, *B. tentaculata*, *Valletia lacustris*, *Cyclas cornea*, and *Limneus pereger*.

In the river Lean at Bulwell there are *Valvata piscinalis*, *V. cristata*, *Planorbis carinatus*, *P. contortus*, *P. vortex*, *Bithinia tentaculata*, *Limneus pereger*, *Anodon cellensis*, and *Ancylus fluviatilis*.

A moist mud-bank left by the Trent floods at Sawley contains *Limneus truncatulus*, *L. palustris*, *L. pereger*, and *Helix alliaria*.

A dry bank near has *Helix nemoralis*, *H. arbustorum*, *H. hispida*, and *Bulimus lubricus*.

A cool bank at Thrumpton contains *Helix nemoralis*, *H. arbustorum*, *H. hispida*, *H. fulva*, *Clausilia nigricans*, *Bulimus lubricus*, *Succinea Pfeifferi*, *S. putris*, *Helix cellaria*, and *H. alliaria*.

A sand-bank in the lane at Highfield House has *Helix nemoralis*, *H. hispida*, *H. concinna*, *H. virgata*, *H. arbustorum*, *H. rotundata*, *H. cellaria*, *H. pulchella*, *Bulimus lubricus*, *B. obscurus*, *Azeca tridens*, *Pupa umbilicata*, and *Clausilia nigricans*.

The Nottingham Castle-yard contains *Helix aspersa*, *H. hispida*, *H. nemoralis*, *H. cellaria*, *H. rotundata*, *Bulimus lubricus*, *B. obscurus*, and *Pupa umbilicata*.

Oxton Bog and Warren has *Helix fulva*, *H. lucida*, *H. pura*, *H. pulchella*, *H. hispida*, *Bulimus lubricus*, *Vitрина pellucida*, *Physa acuta*, and *Segmentina lineata*.

The Hill Farm at Stanton-on-the-Wolds has *Helix hispida*, *H. sericea*, *H. depilata*, *H. concinna*, *H. fulva*, *H. aculeata*, *H. pygmæa*, *H. caperata*, *H. ericetorum*, *H. nemoralis*, *H. virgata*, *Bulimus lubricus*, *Carychium minimum*, and *Vitрина pellucida*.

British Marine Shells found on the Coast of Deal, Kent.—

<i>Dentalium entalis</i>	<i>Cardium edule</i>	<i>Natica monilifera</i>
<i>Terebella chrysodon</i>	<i>Nucula nucleus</i>	„ <i>Alderi</i>
<i>Teredo navalis</i>	<i>Mytilus pellucidus</i>	<i>Venerupis pullastra</i>
<i>Pholas dactylus</i>	<i>Pecten opercularis</i>	<i>Trochus Martini</i>
„ <i>candida</i>	„ <i>lævis</i>	<i>Lutraria compressa</i>
<i>Mya truncata</i>	„ <i>varius</i>	<i>Solen Ensis</i>
<i>Balanus rugosus</i>	<i>Anomia Ehippium</i>	<i>Turbo meritoides</i>
<i>Mactra stultorum</i>	<i>Chiton fascicularis</i>	„ <i>littoreus</i>
„ <i>subtruncata</i>	<i>Patella vulgata</i>	<i>Murex erinaceus</i>
„ <i>elliptica</i>	<i>Tellina fabula</i>	<i>Purpura lapillus</i>
<i>Donax anatinus</i>	„ <i>solidula</i>	<i>Cyprea Europæa</i>
<i>Venus verrucosa</i>		

These were all taken in about two hours' collecting, and many of them I have duplicates of, and should feel happy to present them to any one forming a collection. The above are only a part of the mollusks that may be found on the Deal coast at low water.—*H. T. Harding*; 1, York Street, Church Street, Shoreditch, February, 1852.

The Artist and the Butterflies.—"He was beginning to paint the figure of a reclining sylph, when a difficulty arose in his own mind how best to represent such a being of fancy. A friend who was present said, 'Give the sylph a butterfly's wing, and then you have it.' 'That I will,' exclaimed Stothard; 'and to be correct I will paint the wing from the butterfly itself.' He sallied forth, extended his walk to the fields some miles distant, and caught one of those beautiful insects: it was of the class called the peacock. Our artist brought it carefully home, and commenced sketching it, but not in the painting-room; and leaving it on the table, a servant swept the pretty little creature away, before its portrait was finished. On learning his loss, away went Stothard once more to the fields to seek another butterfly. But at this time one of the tortoise-shell tribe crossed his path and was secured. He was astonished at the combination of colour that presented itself to him in this small but exquisite work of the Creator; and from that moment determined to enter on a new and difficult field—the study of the insect department of Natural History. He became a hunter of butterflies. The more he caught, the greater beauty did he trace in their infinite variety; and he would often say that no one knew what he owed to these insects; they had taught him the finest combinations in that difficult branch of art—colouring."—From *'The Life of Thomas Stothard, R. A.'*

Captures of Lepidoptera in Cannock Chase, &c.—The following list contains a few of my best captures during last season. It may perhaps interest some of your readers. Where no other locality is mentioned Cannock Chase is to be understood:—

Lithosia mesomella, end of June, beaten from heather among birches by day, and flying at dusk, common.

Gastropacha Illicifolia, May 17, in repose, clinging to a dead sprig of heather, apparently but lately emerged from the pupa. From its great resemblance to a withered leaf it would not probably have caught my eye, had I not luckily knelt down within a few inches of it to pin a small Tortrix. This fine addition to our Bombyces was announced at the June meeting of the Entomological Society, and exhibited at the subsequent one in July. What is its time of flight?

Platypteryx Lacertula, ten, June 20 to July 21, beaten from birches.

P. falcata, fifteen, May 22 to August 21, beaten from birches.

Cerura furcula, one, from larva on willow; Gayton, Norfolk, appeared April 23.

C. bifida, a larva, on willow; Gayton, September, now in pupa.

Ptilodontis palpina, one from larva, on willow; Gayton, appeared April 19.

Notodonta Dictæoides, a larva, on willow; Gayton, now in pupa. I believe this is generally found on birch.

N. Ziczac, one from larva, on willow; Gayton, appeared May 5. Also in September last, upwards of a dozen larvæ at the same place, now in pupæ.

N. Dromedarius, a larva, on birch, Cannock Chase, now in pupa: continued feeding till November 9.

N. Dodonæa, one from pupa, dug up under an oak at Bagots' Park in this neighbourhood, appeared April 22.

Clostera reclusa, one from larva, on willow, Gayton; appeared April 1. Also a larva at the same place last September, now in pupa.

Apatela leporina, two, June 23—28, on trunks of trees; Cannock Chase. Also several larvæ at Gayton, on willow, now in pupæ.

Ceropacha flavicornis, upwards of sixty, on palings, March 8 to April 1. Occasionally flying in the sun about the tops of birches.

Hadena suasa, one, at light, at window, June 20.

H. contigua, two, on palings, June 25—28.

H. glauca, four, on palings and trunks of birches, May 17—21. I have taken this as early as April 27.

Cloantha Solidaginis, common on trunks of birches, middle of August.

Plusia Interrogationis, one, July 2, flying over heather in the sun. This species is rather abundant here in some seasons.

Brephos Parthenias, common at the end of March and beginning of April, flying swiftly about the tops of birches in the sun.

Hyphenodes humidalis, several, beaten from tussocks of grass; Coleshill bog, Warwickshire, July 17. I had no opportunity of looking for it at dusk, or no doubt I should have found it plentiful.

Phorodesma bajularia, one, beaten from an oak; Shustoke, Warwickshire, July 21.

Geometra Papilionaria, one, at light; Shustoke, July 11.

Eupisteria Hepararia, beaten from alders; Cannock Chase, middle of June, rather common.

Biston Betularius, several from pupæ, dug up at the roots of trees, appeared April 13—May 18. Also a considerable number of larvæ at Gayton, on sallow, now in pupæ.

B. Prodromarius. My brother took one on a gas-lamp at Cambridge, March 21.

Cheimatobia borearea, several on the trunks of birches, October 31—November 20.

Melanippe hastaria, several, beaten from birches, May 24—June 19. Common in some seasons.

M. amnicularia, one, at light, Shustoke; and several beaten from birches, Coleshill bog, July 8—18.

Ypsipetes impluviata, beaten from alders, middle of June, abundant.

Eupithecia sobrinaria, several, beaten from mixed hedges; Shustoke, July 18—26.

Tortrix Cratægana, one, beaten from hazel; Shustoke, July 16.

Sericoris decrepitana, one, beaten from a Scotch fir, June 30.

Roxana arcuana, abundant during June, flying in the sun and settling on the common brake.

Pædisca —, new species? one, beaten from an oak in Packington Park, Warwickshire, August 2.

Ephippiphora novana? several, beaten from hazel; Shustoke, July 31—August 11.

Olindia Ulmana, beaten from hazels in hedges at Shustoke, in July, abundant.

Pempelia Betulæ, one, at light; Shustoke, July 13.

Semioscopis Avellanella, rather common on the trunks of birches, end of March and beginning of April.

Cecophora stipella, one, end of May, flying.

Depressaria pallorella, six, in company with *D. characterella* on reed blossoms after dark, with a lantern; Gayton, September 15—23. The reeds were literally swarming with such things as *pistacina*, *lunosa*, *litura*, *ferruginea*, *Silago*, *Cerago*, &c., every blossom having several occupants busily engaged in extracting its juices.

Gelechia Basaltinella, one, beaten from a hedge; Shustoke, July 29.—*W. S. Atkinson*; *Vicarage, Rugeley, Staffordshire, February, 1852.*

Another Buzz from the Bees.—When I first read the account of Mr. Langstroth's discovery,—viz: that bees will work as well in hives exposed to the full light of day, as in those from which the light has been carefully excluded, I was disposed to be very sceptical; or at least to suspect that a too general conclusion (rather a pet mistake of bee-keepers) had been formed from a single and peculiar exception to an allowed rule: nor am I yet prepared—while I see some ground for *hoping* that the alleged discovery may be a genuine one—to accept it as yet fully established, till we have received some more definite and detailed account of it. Naturalists must not be over hasty in accepting as “truth” presumed facts, which like that before us appear to rest on no better foundation than mere newspaper statement. Having delivered myself of this wise maxim, I will go on to observe that your valued correspondent, Mr. Newman, seems to me to err somewhat against my axiom, in assenting too readily to the truth of the discovery alluded to, but, as I cannot but believe, from a misapprehension of the alleged discovery itself! Is he, I would ask, prepared to affirm that bees will carry on their labours *permanently* in *transparent* hives with as much good will, and the same success, as they do in those from which the light, as at present, is jealously excluded? I do not gather so much from his remarks in your last number (Zool. 3358). Nor certainly do I think he has made out a sufficiently strong case from his own detailed experience to warrant either himself or his readers in accepting it as “*conclusively settled*” that bees “do not require the light to be carefully excluded from their habitations.” I have kept bees now a considerable time, and have bestowed, of late years, a very particular attention on several colonies of these insects so located, in “glass hives,” as to afford me unusual facilities for close and uninterrupted observation; but though my experience tallies in every particular with Mr. Newman's, as stated in the ‘Zoologist’ of last month, I should still feel disposed to believe that, in general, bees do require the light to be excluded from their habitations. Perhaps I may be permitted to give the result of my own observations on this point in my own words. Three things I have observed, and that invariably—1st, that, when in a state of inactivity or *repose* (I do not say of *sleep*), be it summer or winter, bees are in no way incommoded by the (even *sudden*) admission of light. The only indication which I have observed them give under such circumstances, of their being aware of anything unusual, has been by a rapid but momentary fanning of the wings,—the insects otherwise remaining immovable. *Still less* (which is the *second* fact) are they concerned by the admission of light in the height of the busy season,—those of them, at least, who are engaged in the *in-door business* of the hive. I have had bell-glasses or hive-windows exposed to the light for an hour together without detecting any perceptible influence which it had on the bees. Thus I have narrowly watched the process of comb-making; seen the queen traverse and retrace both drone and worker comb, depositing her eggs one while, or fed and cleaned by the bees another, and observed the common bees tend their young, as uninterruptedly by the strong glare of a Palmer's double-wicked candle-lamp at midnight (for bees in summer-time are as busy by night as by day), as by the full blaze of noon-day. So far my own experience would tend to corroborate Mr. Langstroth's discovery, but I can go no further, for I have enjoyed this uninterrupted view of the different interior processes of the hive only at night, or during weather by day, which compelled the bees to remain at home. If on the contrary (which is the *third* observation), the weather was fair and invited to out-door occupations (of which the bees very quickly become aware), all who were anxious to get out thronged the windows whose shutters were withdrawn, in

such numbers that all good view of the interior, and therefore all accurate observation was at an end. The bees were evidently at a loss to find the exit; by which it would seem that bees are not always the *blind* creatures which they have been represented to be (I could adduce other facts to show that they see well enough at times), but are guided as much by *sight*, in their passage to the open air, as by any other sense or instinct. Be this as it may, certain it is that I have never been able to make any accurate observations on fine working days. I am bound, however, to acknowledge that I have not, by leaving the glasses exposed, or opening the window-shutters for a sufficient length of time, endeavoured to ascertain whether the bees might not gradually get accustomed to the light, and find their way out by *memory* instead of sight. Here it is that my hope lies respecting the truth of the new discovery: for although, even after the establishment of this fact, certain difficulties remain, yet I see not at present any insuperable obstacle to the discovery being found to work successfully in practice, with a due attention to certain rules. I shall pay particular attention next spring to the clearing up of this interesting, but, I think, still doubtful point. — P. V. M. *Filland; Ross, Herefordshire, February 13, 1852.*

Occurrence of Clostera anachoreta in Britain.—Last year I found a larva which I at once pronounced to be that of *Clostera anachoreta*; and I have the great gratification to announce that it produced a fine female moth on the 15th of February, which is now on my setting-board. The re-appearance of *Melitæa Dia* would be in no respect more remarkable than that of this extremely rare and doubted British insect. — *Richard Weaver; Pershore Street, Birmingham, February 17, 1852.*

Proceedings of the Zoological Society.

Evening Meeting, January 13, 1852.—W. YARRELL, Esq., in the chair.

Mr. Gould having a new species of humming bird to describe, took occasion to refer briefly to the whole of the birds which belong to the genus *Thalurania*, in which he places it under the name of *T. refulgens*.

Mr. Tomes exhibited a drawing of the head of a young rattle-snake (*Crotalus horridus*), which he had recently dissected, and which exhibited a fang developed upon each portion of the double root.

Dr. Baird read a paper upon the family Apodidæ, crustaceans belonging to the division Entomostraca, with the description of a new species of *Apus*, and of two species of *Ostracoda*, belonging to the genus *Cypris*. This paper contained a complete monograph of the family Apodidæ, composed of *Apus*, five species; *Lepidurus*, three species.

The new species were characterized under the names of *Apus domingensis*, *Cypris Belcheri*, *Cypris Schomburgkii*.

The Meeting adjourned to January 27.

January 27, 1852.—PROFESSOR BELL, F.R.S., in the chair.

The Secretary exhibited, on the part of Captain Stokes, R.N., the eggs of the Kakapo (*Strigops*), and of the Weka (*Ocydromus*), obtained in the Middle Island, New Zealand, during the surveying voyage of H.M.S. Acheron, and now first made known to zoologists.

Mr. Gould exhibited a remarkable variety of *Ocydromus australis*, differing from both the specimens of that bird now living in the menagerie of the Society.

Mr. Lovell Reeve contributed a paper on some new species of *Paludomus*, a genus of fresh-water shells, collected in a branch of the Ganges.

The following paper was read by Professor Owen:—"Notes on the Egg and Young of the Apteryx, and on the casts of the Eggs and certain Bones of *Æpyornis*."

The Secretary placed upon the table casts of two eggs, and of portions of the leg-bones of a gigantic bird of the Island of Madagascar, which had been presented by the Administration of the Garden of Plants in Paris, and on these Professor Owen made the following observations. The casts were beautifully made and coloured, and were exact representations of the originals, which the Professor had examined during a visit to Paris in July last. These were received at the Garden of Plants in January last, and were described this day twelvemonth, in a communication made by M. Isidore Geoffroy St. Hilaire to the Academy of Sciences. They had been obtained by the master of a merchantman at the Island of Madagascar in 1850, from the natives, who stated that one of the eggs had been found, entire, in the bed of a torrent, amongst the debris of a land-slip: a second egg, with some fragments of bone, was subsequently found in a formation which is stated to be alluvial; a third egg, which the natives had perforated at one end, and used as a vessel, was also obtained. This egg was fractured in the carriage, the other two eggs arrived entire. They are nearly of the same size, but differ in shape, one being shorter, but a little thicker, and with more equal ends than the other. The following are admeasurements of these eggs and of an ostrich's egg:—

Greatest circumference.	ÆPYORNIS.				OSTRICH.			
	feet. in. lines.				feet. in. lines.			
Lengthwise.....	2	10	9	.....	1	6	0	
Breadthwise	2	4	3	.....	1	4	6	
Extreme length in a straight line	1	0	8	.....	0	6	4	

M. Isidore Geoffroy estimates the larger of the two eggs to contain $10\frac{1}{2}$ quarts, or the contents of nearly 6 eggs of the ostrich, or 16 of the cassowary, or 148 of the hen, or 50,000 eggs of the humming bird. The portions of bones, of which casts were exhibited, consist of the lower end of the right and left metatarsal bones, and the upper end of the right fibula. These are nearly equal in size to the corresponding parts of the skeleton of the *Dinornis*. From the obvious differences which M. Geoffroy found on comparing these fragments with the casts of the metatarsus of the *Dinornis giganteus*, he has inferred with much probability not only the specific but generic distinction of the gigantic bird of Madagascar, and has proposed for it the name of *Æpyornis maximus*. This distinction is illustrated not only by the metatarsal bones, but by the eggs themselves.

Mr. Walter Mantell of Wellington, New Zealand, has recorded his observation of an egg of a *Dinornis* found in the volcanic sand, of the magnitude of which he endeavours to give an idea, by stating that his hat would have been but large enough to

have served as an egg-cup for it. The fragments of the egg of *Dinornis* or *Palapteryx*—of what species, of course, cannot be determined—show, after arriving approximately at their size by the curve of the fragments, that the shell was not only absolutely thinner, but relatively much thinner than in the ostrich, and *à fortiori* than in the *Æpyornis*. The air-pores, also, have a different form, being linear, not rounded, and the external surface is smoother. In the smoothness and thinness of the shell the egg of the *Dinornis* resembles that of the *Apteryx*. In the thickness of the shell, and the comparative roughness of its exterior, the egg of the *Æpyornis* more resembles that of the ostrich and cassowary. Such colour—a dull greyish yellow, as the originals of the eggs of the *Æpyornis* now at Paris show—may well have been derived from the recent alluvial soil in which it is stated that they were discovered; the darker stain on one part of the circumference of the larger egg seems to have been due to some accidental circumstance. Most probably they were originally white, like the eggs of the ostrich and like the fragments of the eggs of the *Dinornis*; whether an original green tint, like that of the egg of the emu and cassowary, would be wholly discharged by long continuance in the soil, may be a question. It is most probable that the entire eggs of the *Æpyornis* were excluded in the usual fertile state, but had suffered such want or interruption of the heat requisite for their incubation as to have become addled.

How hazardous it is to judge of the size of a bird by that of its egg would appear, Professor Owen observed, by the remarks which he should next proceed to offer on the eggs of the *Apteryx*. Of these the Professor exhibited one entire specimen, and a nearly fully incubated chick from a second egg, both of which have been most liberally transmitted to him by the Rev. William Cotton, M.A., from the North Island of New Zealand. Had it not been for the demonstration afforded by the chick itself, it might well have been doubted whether so small a bird could have excluded so large an egg. The following are the dimensions of the egg:—

	EGG OF APTERYX.		
	feet.	in.	lines.
Greatest longitudinal circumference	1	0	9
Greatest transverse circumference	0	10	0
Length	0	4	10
Breadth	0	3	2

The egg presents the usual long oval form; the colour a dull dirty grayish white; but this is partly due to grease-stains, from the decomposition of an incompletely-hatched chick, with its yolk, within. Viewed under a moderately magnifying power, the surface presents a very fine fibrous or spicular character, the raised lines, like spiculæ, crossing in opposite directions, with air-pores scattered here and there, and barely perceptible to the naked eye. The shell is not more than one-eighth of a line in thickness. Supposing, as is most probable from a comparison of the bones, that the *Æpyornis* did not equal in size the *Dinornis giganteus*, then the egg of the *Æpyornis* would be smaller in proportion to the bird than the egg of the *Apteryx* is.

The embryo *Apteryx*, which had been removed from its shell, had nearly reached the term of its incubation, the yolk-bag being reduced to a hernia-like appendage of an inch in length and half an inch in breadth. The whole body was clothed by down-fascicles, presenting the appearance of moderately thick cylindrical hairs, one inch and a half in length, with a smooth unbroken exterior, gradually tapering to a fine

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point. This smooth surface is due to an extremely delicate capsule, which when torn open exposes the down-tuft, consisting of a central stem, with slender smooth barbs, from three to five lines in length, diverging loosely from each side of the stem.

	in. lines.
Length of the body from the base of the beak to the tail	4 0
Length of the beak	1 7
Length of the leg from the knee-joint	4 3
Length of the freely projecting part of the fore-limb from the } elbow-joint	0 6

From these dimensions it would be seen that, with the characteristic large size of the unhatched young in the genus *Apteryx*, the chief peculiarities of the remarkable external form of the bird had been acquired. The feet were very completely formed with well-developed claws, the small back claw presenting its characteristic proportions, and the integument of the naked part of the foot its well-marked scutation. The little wing-rudiments had their terminal hook. The tail presented the form of a short bifid prominence. The beak, being comparatively soft, had become distorted and bent in the bottle of spirits in which the specimen was transmitted to the Professor, but it showed its characteristic shape, the terminal nostrils, and the slight terminal expansion, which forms the end of the crutch in the mature bird. The eyelids, with their cilia, and the orifice of the ear, opening obliquely upwards, were rather larger in proportion than in the adult, according to the usual law of the precocious development of those organs of sense; and the same remark applies to the entire cranium. The neck is relatively shorter and thicker. The young bird must be excluded unusually well developed, with a complete clothing very like that of the parent, and capable of using its limbs and beak for its own safety and support.

Monthly General Meeting, February 5, 1852.

Miss Burdett Coutts, Messrs. J. H. Gurney, T. Naghten, T. Lacy, G. Gillett, and R. O'Brien Jameson, were elected Fellows.

Lord Garvagh, the Hon. G. W. Milles, Messrs. W. M. Bigg, W. Ward, R. Sayer, W. Taunton, and F. C. C. Rash, were proposed as candidates for the Fellowship.

February 10, 1852.—W. YARRELL, Esq., V. P., in the chair.

The chairman exhibited a specimen of *Echiodon Drummondii*, a very rare species of fish, first described by Mr. Thompson, of Belfast, and of which only one example has been previously known. Dr. Drummond obtained the first specimen on the beach at Carnclough, near Glenarm, in the county of Antrim, in June, 1836, cast ashore probably by the tide of the preceding night, after a strong easterly wind. The species was considered new to Ichthyology, and was described and figured in the 'Transactions' of this Society by Mr. Thompson, vol. ii. p. 207, plate 38. Nothing that has transpired since the publication of Mr. Thompson's paper has induced a belief that this species had been previously known. The specimen now exhibited was most liberally sent to Mr. Yarrell, by Mrs. Blackburn, of Valencia, in the county of Kerry, who was perfectly aware of the character and the rarity of the fish. It was found by her daughter Helen, on the shore of the harbour of Valencia, after a violent storm

from the west, which occurred on the 23rd of January last. This example is smaller than the one noticed by Mr. Thompson, measuring only eight inches in length, but quite perfect. Mr. Thompson's example measured twelve inches.

Mr. Gould exhibited and described four new species of bat indigenous to Australia, to which he gave the names of *Scotophilus picatus*, *Vespertilio macropus*, *Taphozous Australis*, *Phyllorhina* (?) *cervina*. The first of these is a remarkably beautiful species, and was obtained by Capt. Sturt, at his farthest camp in his last journey into central Australia. The others were collected by Mr. Macgillivray.

The Secretary read a paper, communicated to him by Mr. Scott, of Ash Island, N.S.W., upon the habits of *Cystosoma Saundersii*, with a description of the female insect, now first made known.

Dr. Baird read a monograph on the Branchipodidæ, in which he instituted a new genus, and described a new species from St. Domingo; together with two Limnadiæ from Brazil and St. Domingo.

Mr. Selater exhibited and described two new birds from his own collection, which he characterized under the names of *Culicivora boliviana*, and *Pipra flavotincta*.—*D. W. M.*

Proceedings of the Entomological Society.

Anniversary Meeting, January 26, 1852.—J. O. WESTWOOD, Esq., President, in the chair.

The Secretary read the Report made to the Council by the Library and Cabinet Committee: and Mr. Wilkinson, one of the Auditors of the Treasurer's Accounts for 1851, read an abstract thereof, exhibiting a very improved condition of the Society's financial affairs.

The Ballot then took place, when Messrs. J. Curtis, W. Spence, J. J. Weir, and W. Wing, were elected Members of the Council, in the room of Messrs. F. Bond, W. S. Dallas, W. W. Saunders and G. R. Waterhouse: J. O. Westwood, Esq., was re-elected President, W. Yarrell, Esq., Treasurer, and J. W. Douglas and H. T. Stainton Secretaries.

The President delivered the usual Address on the State and Prospects of the Society, and of Entomology generally; for which a vote of thanks was passed, and he was requested to allow it to be printed.

Votes of thanks were also passed to the Treasurer, Secretaries, and the retiring Members of the Council.

February 2, 1852.—J. O. WESTWOOD, Esq., President, in the chair.

The following donations were announced, and thanks ordered to be given to the donors:—The 'Zoologist' for February; by the Editor. The 'Literary Gazette' for January; by the Publishers. 'Revue et Magasin de Zoologie,' 1851, Nos. 1 to 10; by M. Guérin Ménéville. 'Insecta Britannica'—Diptera, Vol. i.; by the Publishers.

'Entomologische Zeitung' for December and January; by the Entomological Society of Stettin. 'Journal of the Royal Agricultural Society of England,' Vol. xx., Part 2; by the Society. 'Synopsis of the Cleridæ of the United States;' 'On the Pselaphidæ of the United States;' 'Descriptions of new species of Coleoptera from California;' 'An Attempt to Classify the Longicorn Coleoptera of the part of America north of Mexico;' all by John L. Le Conte, M.D., and presented by the Author. Three specimens of a species of *Bostrichus* that feeds on Chinese bamboo cane; by Mr. Bowring. *Phyllosoma clavicornæ*, one of the glass-shrimps, captured at sea, on the passage from Central America to the South Pacific; *Zopherus mexicanus*, caught on an island in the bay of Fonseca, St. Salvador, and one of the *Mutillidæ*; all presented by Miss Elizabeth Hornby. A collection of insects of all orders, from Shanghai; presented by Professor Thompson of Glasgow, through Dr. Carpenter.

Mr. F. Cox, of Van Diemen's Land, was elected a Corresponding Member of the Society.

The President appointed Messrs. John Curtis, J. F. Stephens, and H. T. Stainton, Vice-Presidents for the year.

The President read the following note from Mr. Spence, and exhibited the vase and insects referred to; the latter appear to be an undescribed species.

18, Lower Seymour Street, February 2, 1852.

"My dear Sir.—I beg to send from Mr. Bowring, of the Board of Trade, for the inspection of the Society, a Chinese carved vessel or vase of bamboo, the interior of which has been much injured by one of the minute *Bostrichidæ*, of which specimens are gummed on the card in the box enclosed herewith, and of which Mr. Bowring begs the Society's acceptance. I will thank you to let the vase be sent back to me, that I may return it to Mr. Bowring, and also a note with the name of the beetle, if it is a known species. If a new one it might be called *Bostrichus* (or whatever is its modern genus) *Bambusæ*.

I am, my dear sir, yours very truly,

"J. O. Westwood, Esq."

W. SPENCE."

Mr. Curtis remarked that this exhibition was interesting, inasmuch as bamboo was usually free from attacks of insects, and indeed, on that account the canes were imported to make fences and for other purposes.

Mr. Douglas, on the part of Mr. C. S. Gregson of Liverpool, exhibited a drawing on rice-paper, by his friend Sylvester Diggles, Esq., of the British specimen of *Gastropacha Ilcifolia* in Mr. Gregson's collection. The beautiful execution and softness of effect of this drawing elicited great admiration.

Mr. Douglas exhibited some specimens of *Lithocolletis Carpinicolella*, reared during the last month by Mr. Stainton, from hornbeam leaves gathered in October and November. Mr. Douglas remarked that it was a great advantage, by means of heat, to rear such small species as this in the winter, when the collector had more time to devote to setting them out, than the pressure of other captures in summer-time would generally permit, and in insects of such delicacy it was a matter of importance that this operation should be performed with nicety.

The President exhibited a female of the *Psyche*, which Mr. Weaver, in a note read at a former meeting, sought to establish as a species distinct from *P. opacella*. Mr. Weaver had informed him that Mr. Doubleday could not see the legs Mr. Weaver

asserted he had discovered ; but being confident from the habits of the larva, and other circumstances, that it is a distinct species, he had sent it to the President for inspection. He had accordingly examined it, but the specimen had been mutilated in the endeavour to make the legs apparent, and he was therefore not able to pronounce so decisively as he wished, but it appeared that there were, or rather had been, three pairs of membranous, cylindrical appendages ; the first close to the head, the second adjoining, and the third, posterior. He would not assert that these were legs, for they were not articulated, but they were certainly tubuliferous and not merely membranous appendages. The insect was destitute of antennæ, in which also it resembled some other species of Psychidæ and the Oiketicæ.

Mr. J. F. Stephens thought that the insect in question did not differ, as regarded its legs, from females of *P. opacella*, which the President said he had not had an opportunity of examining.

Mr. Adam White exhibited a small collection of insects, chiefly Coleoptera, made by Dr. Joseph Hooker during his late Botanical researches in the Khasya Hills. He enumerated *Cercidocerus Hookeri*, *White*, *Broscus Nepalensis*, a new species of *Morimus* allied to *M. tristis*, Dictyoptera *Javetiana*, *Coryphocera tibialis*, *Rhomborina amethystina*, *Lema 4-maculata*, *Urophora Hardwickii*, *Gray*, a *Coccinella* allied to *7-punctata*, and *Geotrupes orientalis*, remarkable as a species of a genus rare everywhere but in Europe and America. Several species, Mr. White observed, were especially interesting as confirming the views of the geographical distribution of insects propounded by Mr. Hope in Royle's 'Himalaya.'

In the collection of insects from Shanghae on the table, Mr. White pointed out a new species of *Lamia*, and a *Pontia* almost identical with a common British species.

The President read a Memoir on the Neuropterous genus *Mantispa*, including descriptions of several new species.

Mr. Dallas read a Memoir on some new species of Hemiptera.

Mr. Curtis read some observations on the synonymy of the British species of *Acanthosoma*.

Mr. F. Smith read a note on the *Pediculus Melittæ* of Kirby, tending to show that it was not the larva of any insect as had been supposed.—*J. W. D.*

Proceedings of the Microscopical Society of London.

December 21, 1851.—DR. LANKESTER in the chair.

A paper by J. H. Huxley, Esq., entitled '*Lacinularia socialis*, a Contribution to the Anatomy and Physiology of the Rotifera,' was read. The author commenced by stating that the *Lacinularia socialis*, a very singular and beautiful Rotifer, was found by him in great abundance, on leaves of *Ceratophyllum*, in the River Medway, a little above Farleigh Bridge ; and as, on account of their relative large size, their transparency, &c., they present especial advantages for microscopical investigation, he had availed himself of an opportunity which occurred to him, of inquiring somewhat minutely into their structure. He proceeded to mention their general appearance and

habits, and then entered more minutely into the description of their various organs, viz., the trochal disk (which he stated to be wide and horse-shoe shaped, the edges being richly provided with large cilia, presenting a very beautiful and wheel-like movement), the mouth and its appendages, the œsophagus, and the intestines. He next described the water vascular system, quoting at the same time the opinions of various other observers upon this part of the subject. He next mentioned appearances which he terms vacuolar thickenings, some of which he stated to have been considered by Prof. Ehrenberg as ganglia, others as testes, &c., but, in the author's opinion, erroneously, inasmuch as they appear to him to be merely local thickenings of the parietes in various parts of the body. The nervous system and organs of sense, were then described; and some remarks on the reproductive organs followed, in which some curious observations on the development of the ova were given, showing that the process is exactly that which takes place in all fecundated ova, and leading to the supposition that Spermatozoa should, somewhere or other, be found. He, however, had not been able to satisfy himself of their existence, although he had seen objects which answered precisely to Kollicher's description of the Spermatozoa in *Megalotrocha*, and expressed his opinion that it was impossible, in the present state of our knowledge, to come to any definite conclusion upon the subject. He next proceeded to make some remarks on the asexual propagation of *Lacinularia* and other Rotifera, in which he pointed out the difference between the ordinary ova and those called "winter ova," which last he proposed to call ephippial ova. The development and progress of these last were very fully described; and he concluded this part of the subject by stating that "there are two kinds of reproductive bodies in *Lacinularia*: 1. Bodies which resemble true ova in their origin and subsequent development, and which possess only a single membrane; 2. Bodies half as large again as the foregoing, which resemble the ephippium of *Daphnia*, like it, have altogether three investments, and which do not resemble true ova, either in their origin or subsequent development, which, therefore, probably do not require fecundation, and are thence to be considered as a mode of asexual reproduction." He then proceeded to make some remarks on the zoological position of the Rotifera, as deduced from the structure of the *Lacinularia*, as now described; and, after pointing out that the relations between the Polyzoa and the Rotifera were at the best only mere analogies, he stated that the general agreement in structure between the Rotifera and the Annuloidæ (under which term he includes the Annelidæ, the Echinoderms, the Trematodæ, Turbellaria, and Nematoidea) is very striking, and such as to constitute an unquestionable affinity. This position he proved by numerous examples, and concluded by giving a sketch of the affinities of the Annuloidæ, in which class he proposes to place the Rotifera, thus removing them entirely from the class Radiata of Cuvier, in which they have hitherto been included.

January 28, 1862.—DR. ARTHUR FARRE, President, in the chair.

The minutes of the preceding meeting were read and confirmed.

Two presents were announced, and the thanks of the Society voted to their respective donors.

Certificates in favour of L. S. Beale, Esq., 12, Wilton Place; Dr. Hamilton, Grafton Street, Bond Street; and Charles C. Smith, Esq., Bury St. Edmunds, were read, and ordered to be suspended in the meeting-room.

William King, Esq., and Henry Perigal, Jun., Esq., were balloted for and duly elected Members of the Society.

Messrs. H. H. White and H. Dean were appointed Auditors of the Treasurer's accounts for the past year.

A paper by the Secretary, John Quekett, Esq., 'On the Structure of Raphides,' was read. The author commenced by stating, that inorganic substances were formed in plants under two circumstances : first, in crystals, as in the case of phosphate and oxalate of lime ; second, as a portion of the tissue, as in the case of silica in the bark of equisetaceous and gramineous plants. The crystals were stellate, or single, from the $\frac{1}{16}$ th to the $\frac{1}{1000}$ th of an inch in diameter. Single crystals of oxalate of lime were octohedral ; those of phosphate of lime were acicular. Numerous plants were referred to in which raphides were found, as in many species of Cactus, the lime, rhubarb, elm, apple, onion, and other plants. The author exhibited drawings of artificial raphides which had been prepared in the tissue of rice-paper, by the late Mr. Edwin Quekett, by immersing the cells first in lime water, and afterwards in oxalic acid. In conclusion, the author gave a detailed account of some stellate raphides, which he had found in great abundance in a species of Cactus. On dissolving up the inorganic matter of these crystals by means of hydrochloric acid, he was surprised to find that an organic base was left perfectly similar in form to that of the crystal which had been dissolved. From this fact Mr. Quekett inferred that all these crystals were deposited with organic nature. He referred to the structure of calculi in the human and animal body, which, he stated, were always deposited upon or with an organic base, as proof that this law was general, and that the deposition of inorganic salts in the tissues of plants and animals was always connected with the growth of organic matter.

A paper by the Rev. J. Thornton, 'On the Pupa of an Insect bearing considerable resemblance to an Aphis,' was read. A few meetings since, specimens and a drawing of the exuviae of an insect whose head, body and legs, were beautifully fringed with leaf-like appendages, were exhibited to the Society. Since that time the author has continued his researches, and the object of the present communication was to show that he considered he had discovered the insect to which these exuviae belong. His reasons for inferring that the insect now described is the one produced from the exuviae before mentioned, are founded—first, on the habitat, the exuviae, pupa and imago, having been found on the same leaf of *Acer campestre*; second, on the colour and texture; third, on the general form and aspect; and, fourth, on the similarity of the details of the antennae and other peculiarities, among which the change of the leaf-like appendages in the pupa to corresponding bristles on the perfect insect were mentioned, leading, in his opinion, to the inference, that the *Phyllophorus testudinatus*, as he proposed to call it, is the pupa of an undescribed species of *Aphis*, forming a new species if not a new genus.—J. W.

Ratcliffe Society.

A Society bearing this name has lately been established at Oxford, for the encouragement of the pursuit of Natural History, especially among the junior portion of the University. Its objects, should it prosper, are to establish a library and museum, for the use of its members. Any further particulars will be gladly communicated, on application to—*Philip H. Newnham; Wadham College.*

Note on a supposed Thalassicola.—While becalmed off Cape Cormachiti, on the north coast of Cyprus, on September 3, 1849, I observed the sea all around to be studded with myriads of minute gelatinous looking bodies, appearing from the surface to the depth of from four feet to a fathom. Again on September 26, we sailed through many miles of them in the Gulf of Adalia; and I observed them in great numbers, a third time, off the north end of Rhodes, about ten days later. From their general appearance I took them to be spawn; but after reading a paper by Mr. Huxley, in the number of the 'Annals and Magazine of Natural History' for December, 1851, I think that these bodies must be closely allied to, if not identical with his new Zoophyte, Thalassicola. Their general structure exactly corresponds with his description, viz., "minute, spherical, spheroidal, or oval bodies" imbedded in a gelatinous substance. Under the microscope also, these minute bodies seemed to be all cells of various sizes, the larger being distinctly seen to be nucleated: under a higher power, the nuclei exhibited nucleoli. But while thus agreeing in structure with his animal, they showed some external differences, of however comparatively slight importance. That is, they were generally more elongated than those he describes, and the external membrane was frequently constricted in places, causing a beaded appearance. Occasionally, though rarely, the two opposite extremities were united, making the creature completely annular; and in these I never saw the constrictions on the surface. These forms nearly correspond with his *T. punctata*. Among some which I got in the Gulf of Adalia, was one which resembled closely his description of *T. nucleata*, but it was the only one I had on board; however, I remember well to have seen them occasionally floating past. My attention not having been specially directed towards them, I did not examine them so closely as I now could have wished, and in particular I did not see the spiculæ represented by Mr. Huxley. Further observation at the time was also stopped by bad weather, which, in a cutter of only 24 tons, is a great impediment to anything of the kind. Still, however, I believe these bodies must be connected with this Zoophyte, perhaps a different species; and my chief reason for making this communication is for the purpose of directing the attention of any one sailing in those seas, to their occurrence, when possibly they may be completely identified with the form which Mr. Huxley has boldly, and with great show of reason, classed with the animal kingdom.—*W. Balfour Baikie, M.D.; Haslar Hospital, Gosport, February 12, 1852.*

On the Habits of the Kiwi-kiwi (Apteryx Mantelli, Bartlett), with a mention of Ocydromus. By JOHN WOLLEY, Esq.

THE actions of animals can only be fully pictured to the imaginations of those who have seen and studied them when alive. But persons who have had this advantage, may be able to communicate to others a tolerably good idea of an animal, provided that both parties are familiar with other animals which may afford points of comparison; so many are the analogies which occur amongst the different species of living beings. The task will be rendered far easier if those who read the description have also met with other accounts of the same animal, written by observers of a different turn of mind, from separate points of view, and with varied modes of illustration.

That such facilities for acquiring a knowledge of the manifestations of life afforded by so interesting a bird as the Kiwi-kiwi, may be accessible to naturalists who will never have an opportunity of seeing it alive, and especially to those who may live after the last Apteryx has been extinguished from the face of the earth, it seems particularly desirable that many persons should take the present, perhaps the only, opportunity of recording their impressions of a living bird, nothing doubting that, however poor their descriptions, and notwithstanding that better ones may be written by more able men, their own may nevertheless be hereafter found to contain some useful suggestion, or to throw a light upon something otherwise imperfectly understood.

These were the feelings which induced me to prepare the present contribution for the pages of the 'Zoologist,' that valuable periodical which is destined to rescue so many facts and observations from oblivion, and which considers no original communications beneath its notice, however humble their pretensions may be. I shall take it for granted that my readers are more or less acquainted with the general construction and proportions of the Kiwi-kiwi, for even the outlines of a complete description would extend my paper to too great a length, and I could produce nothing upon these subjects not already fully disposed of in the beautiful writings of Professor Owen, in the Zoological Transactions.

The visitor to the Zoological Gardens who specially asks for an interview with the celebrated bird, now for the first time brought alive to this side of the globe, is conducted, by a somewhat obscure route, to the new building called the "Ostrich-house," situated at the north-west corner of the grounds, amongst the trees above the cutting which

forms the Regent's Canal. Well provided with light, and with apparatus for supplying heat and fresh air, it is divided into five stalls, or "loose boxes," three of which are at present occupied by an ostrich and two kinds of antelope. In the furthest of the divisions is a New Zealand rail, most appropriately placed near the Kiwi-kiwi, not only as an additional instance of the extraordinary Fauna of its country, but as showing the striking contrast of its habits to those of its neighbour, which it resembles so much in its plumage and in its want of the powers of flight, whilst it widely differs from it in the relations of its organization. In a few words, the rail is active, inquisitive, playful, moving about by night as well as by day. It jerks its tail in walking; it peeps and peers about, and seems to hide things and to find them again, throwing the intervening material aside by lateral tosses of the beak, almost like a bird of the crow kind. At night, it occasionally utters a very strong cry, repeated many times in succession, which I can only liken to the creaking sound I have sometimes heard produced by turning the large wooden screw of a clothes-press. It frequently gets from the ground upon the roof of its little house, and thence upon a sort of shelf; but I have not seen it open its wings in springing up, though it sometimes does so as it lets itself down. The species is, I believe, *Ocydromus fuscus*; a specimen of *Ocydromus australis* is in another part of the gardens: whether they are different species or not, I am informed that they are indiscriminately called Weka (?) in New Zealand, and, by the European settlers, wood-hen. The first-named of these birds has lately been imported into England, the other was purchased at the sale of the late Lord Derby's animals, at Knowsley, on the 10th of March, 1851.

Interesting as all these birds are, and only wanting a Takahé (*Notornis*) to complete the main surviving features of the New Zealand group of non volant birds, I must confine myself at present to a more lengthened description of the one which is especially the object of this communication.

The stall in which the Kiwi-kiwi is kept is floored with brick, and nearly surrounded by wainscoting of planed deal. In the right-hand farther corner is placed a heap of light vegetable earth, with an edging of dry sods, and in the left is the square deal box which serves for a house, in which the bird spends the whole of the day. This box has an opening, ranging with the back wall, and hung with a little sackcloth curtain, which reaches to within a few inches of the ground, and under which the inmate passes when he sallies out on his nightly expeditions. The side of the box nearest to the spectator is made to

let down ; by which means the poor Kiwi-kiwi is liable, at a moment's notice, to be exposed to the unwelcome glare of day.

It is not easy to speak, with any useful result, of the impressions produced by the first sight of the bird ; these will vary according to the feelings and temperament of the individual, and more especially in proportion to the extent and accuracy of his previous information. The first instinctive action of the mind is to compare a real image with that already existing in the "mind's eye." In the more communicative part of mankind, this gives rise to some exclamation to which it is not uninteresting to listen. I need only mention as one of the most frequent amongst the visitors to the Kiwi-kiwi,— "What a little thing it is !" —often in a tone of disappointment, and sometimes even of indignation, at the supposed "take in," so natural is the preference for a sight of animals of not insignificant dimensions. Probably false notions of size have been derived from representations in some of the illustrated periodicals.

The physiognomy is one of the first things which strikes most persons on seeing a new creature, for we naturally refer everything to the human standard. The epithets of "ugly," "queer-looking," "stupid," are often coupled with such as "clumsy," "sulky," "spiteful." How far these may severally be deserved, will be gathered from what I have to relate. It is certain they are too generally applied not to be highly indicative of impressions produced upon a large proportion of the spectators.

For my own part, as I was not unacquainted with the principal places where descriptions and figures of the several species of Apteryx were to be found, I may perhaps be pardoned for mentioning what most struck me on my first visit as different from my preconceived notions ; though I do not mean to infer that other persons would not have derived more accurate ideas from the same sources.

The various positions, and the expression of the face, were new to me, for these had not yet been transferred to the painter's canvas. The little convex eye had been described by Professor Owen, but its colour had been represented by others as red or green instead of black ; and its rat-like or hedgehog-like expression, heightened by the long bristles placed near it, and representing the "whiskers" which are so much developed in Mammalia of nocturnal habits, could hardly have been realized until seen alive. I remarked the stoutness of the feet and naked part of the legs. I was struck by the scratched and dead-white appearance of the large and bony-looking beak, which so much reminded me of a rook's in that particular, that I actually went away

with an impression that it was worn naked at the base in this individual, a mistake which I afterwards was able to account for by the grayish colour of the feathers on the fore part of the face. The length of the whiskers and the arrangement of the scales above the bend of the foot, showed that it was of the species which Mr. Bartlett has separated under the name of *A. Mantelli*, as he himself has assured me he had ascertained it to be, even before he saw it, by merely feeling the wing, and so learning the nature of the little feathers upon it. Therefore also it is fortunately of the same species as the various specimens described with such care and success by Professor Owen, under the name of *A. australis*, but different from the original *A. australis* of Shaw, which was so cleverly restored by Mr. Yarrell. The length of the beak makes it appear probable that our bird is a female, if, as Professor Owen is inclined to believe, the sexes can be distinguished by this character.

To return to the box, which some time ago we supposed to be opened. If he has not lately been disturbed, our friend, upon his bed of straw, is usually in a position which it is not at first sight easy to understand, so that any one who has not studied it as often guesses wrong as right, when asked upon which side of the body the head is placed. He is rolled into a somewhat oval shape, and nothing is presented to view but what has, from a little distance, the general appearance of hair mixed with bristles. In this assemblage of singular features, for so, upon a closer inspection, they turn out to be, there are seen at one end of the body certain lines and centres of divergence, which afford a clew to the mode in which it is packed. On a more inquisitive examination the arrangement is found to be such as I shall endeavour to describe. The feet are bent under the body, of which the principal part of the weight reaches the ground at the tarso-tibial joint; the claws are contracted, probably by the action of the perching muscle described by Professor Owen as not absent in this terrestrial bird. The great size of the thighs gives considerable elevation to the hind part of the body, and in front the little rudimentary wings rest against the knee, if I may so call the femoro-tibial joint. The neck takes a turn downwards and then upwards, sometimes to the left and sometimes to the right side of the body; the head, facing backwards and pressed to the side, lies *above* the wing, and the beak is placed along and supported by the upper side of the left or of the right thigh, as the case may be. In this position the point of the beak, close to which the nostrils are situated, reaches nearly through the feathers at the hinder part of the back, so that the breathing is unim-

peded. The head is in its proper horizontal position, and the eye on the side away from the body may sometimes be seen peering through the overhanging feathers. In the hollow space formed by the bend of the neck, a number of feathers of the body protrude and fall against the upper part of the neck and head, which last is completely covered by the long feathers that arise above the wing; the course of the beak, the hollow between the thigh and the back, and also the wings, are quite concealed by the feathers which sweep over; but the feathers on the side on which the head happens to be placed, are seen to be raised to rather a higher level than those on the other side of the back. The end of the back-bone, that is, of the coccyx, which supports no tail, nearly touches the ground. The outline of the body, beginning from behind, first rises steeply to the top of the insertion of the thigh, then rather rapidly changes to the horizontal, which part is almost twice as long as the nearly vertical hind part, and in front the outline is very soon inclined under the body. The only visible sign of life in the form before us, for no respiratory movements are seen externally, is an occasional slight lateral swaying or tottering, perhaps owing to the unstable supports of the body resting on a foundation of straw.

This position of rest affords an opportunity for a close approach, and it was thus that I ascertained that a strong smell, something like that of dead leaves, really proceeds from the skin of the animal; it reminded me very much of the smell of the hedgehog. If it be done very gently, the fingers may be passed amongst the feathers without causing the bird, although its eyes may be wide open, to change its position; when the comfortable feel of the diffuse and downy lower webs is found to contrast strongly with the comparative harshness of the short and unbarbed webs of the upper part of the feathers, which alone, with the prolonged bristle-like or almost spine-like shaft, is visible externally. But I have not by this or any other manœuvre been able to feel the beat of the heart, either in the trunk or in the extremities; whilst, from the heat of the body, the circulation must have been actively proceeding.

If now the Kiwi-kiwi be roused gently, the head is removed from the side and directed forwards, the beak not being withdrawn like a sword from its sheath, but like the blade of a clasp knife sweeping through the feathers, the end of it therefore in the action describing a sort of semicircle in the horizontal plane. The neck may continue to lie against the body, and this gives rise to the appearance of a kind of frill (like that of the variety of common pigeon called the Jacobin) at

the back of it, where its nearly erect feathers are pressed against the feathers of the body, and turned aside and forwards. The beak however is never literally in the horizontal plane, it slopes downwards from the first, but keeps getting lower and lower, until the end of it actually rests upon the straw or upon the ground, but so that there is still a considerable slope in it. In the mean time the eye is wide open, the eyelids leaving exposed a complete circle. The margins of the eyelids are not warty but entire, and they are not expanded to form projecting eaves, as they are in owls. In fact, these little eyes afford the greatest possible contrast to the large ones of those equally nocturnal birds, and they differ from them as from all other birds' eyes, as Professor Owen discovered, in the absence of the characteristic internal structure called the marsupium. They are apparently not affected by the light, for there is none of the winking and blinking which is so peculiar to the expressive eyes of owls, though its cause may be questioned. I have only once or twice observed a single pass of the nictitating membrane, and that was by no means rapidly conducted, the colour of this membrane appeared to me to be bluish white. Sometimes the eyes gradually close from sleepiness, the lower eyelid advancing nearly over the whole eye. In the sitting position which I have been describing, the bird will remain for a long time, and he is often seen in it when the box is opened.

Sometimes again he is found with his legs perpendicularly under him, in this respect standing as the storks and some other birds often do. The feathers of the rounded body do not reach down below the end of the fleshy part of the leg, the head is very little advanced from the body, and the beak rests nearly perpendicularly, with its point upon the ground, so that the figure of the bird is something that of a globe upon a tripod. From this position he often seems inclined to bend his legs under him, so as to attain his former one, but on other occasions he remains standing for a long time motionless, and then an opportunity is afforded of ascertaining the rate of breathing, for there is a slight movement observable in the feathers of the under side of the body; several times I have counted about twenty-three respirations in a minute. Here also, as before, the beak seems for the most part to drop gradually into its place, and not to be deliberately put into it to form a support.

From this figure it is very curious to see the sudden change which is produced when the bird is irritated. He then lengthens himself out, straightening his back and his neck, and standing nearly upright. There is generally a slight bend forward of the lower part of the neck,

which, with the feathers upon it, does not seem much narrower than the part of the body which immediately succeeds it. A little lower down there is a lateral enlargement from the rudiments of wings pushing out the feathers, and in front there is a degree of forward curve, but how trifling when compared with that which appertains to birds whose breast-bones have a keel supporting a mass of muscles! Proceeding downwards, the belly, so much longer than that of other birds, seems to retire somewhat until we come to the thick fleshy legs, which, supplied with their own feathers, are not overlapped by those of the body, but show their whole contour, even standing out so as to allow to be seen above them the interval which exists between the true thigh and the belly. The pale colour, and the finer clothing of the middle space of the under side of the body, give it very much the appearance of that of a mammal; the size of the lower extremities, and the general shape reminding one of a kangaroo perhaps more than of a penguin, which has a figure far more thick and compact than the Kiwi-kiwi has. The beak is sloped down considerably, so as to become nearly parallel to the neck. I have fancied that in this condition there is more of the white of the eye visible at the hinder part of it, which gives it a wild expression; but this "white of the eye" is rather of a deep livid colour, not separated from the black by any sudden line. Perhaps the feathers of the head and neck appear more erect than before the putting on the attitude of defence, but they are at all times so much so as to have the appearance of fur. There is never the slightest attempt to use the beak in defence either by pecking or biting; though, from its great strength, it seems that it might be effective in the former way: but the eagle affords a similar instance of reliance upon the feet alone; for Sutherlandshire keepers, who have had many encounters with eagles, have assured me that the beak has never been used in those engagements, whatever opportunities may have been offered to it. The Kiwi-kiwi seems to have little notion of lowering the head or putting it on one side to avoid the hand that is intruded upon it, though the whole body and neck are then drawn back, the front always towards the enemy.

When any approach from the front is made to the bird in this warlike state (and it is never possible to avoid causing a demonstration of his wrath, unless by the most gradual advances), he soon shows his method of attack. He suddenly raises his leg, sometimes the right and sometimes the left, and strikes downwards with great force, while the other leg remains a steady and generally unmoved support. In this act he takes a great range, raising his foot quite up to his breast,

sometimes, I should guess, a foot from the ground as he stands upright. Occasionally he aims a blow sideways, as an eagle will do, but differing from that bird in this respect, that the kind of injury he is able to inflict, requires an impetus only to be attained by a great previous elevation of the foot, whilst the eagle has only to direct his aim by the shortest possible route.

I have known the Kiwi-kiwi to reach a hand placed upon his back, but then he has been in a more horizontal position. Generally the movement is sudden and unexpected, but sometimes the leg is raised up to the breast with the claws expanded, and kept there, at least in one instance, for several minutes; so that I began to think he was *bonâ fide* resting upon one leg, as I have never otherwise seen him do.

I do not know which leg he uses most frequently, but at any one visit he generally is seen to use the same one in all his blows, but not always. Sometimes, again, he takes a kind of spring forwards, and possibly strikes with both legs. These, and the other attacks, when made in good earnest, are accompanied by a kind of growl or grunt, like that of an angry rabbit, which any one who has put his hand into a hole where there is a tame rabbit well knows. The growl is often closely either followed or preceded, I am not sure which, by a snap of the beak, which snap is not so sharp as that made by an owl, and more feeble, perhaps like the noise made by holding together by the ends two small leather straps (say of the size of 6 inches by 1 inch), relaxing them in the middle, and suddenly bringing them together again. This additional menace, however, is by no means a universal or even a general accompaniment of the growl.

On my first interview there appeared to me to be a kind of vicious dig or catch in the middle of the stroke, which made it, as it were, double; and I conceived a theory that this was for the purpose of first driving in the spur-like claw of the hind toe. Prof. Owen had however previously shown that this supposed spur had no existence, as such, at least in *A. Mantelli*; and I have since that occasion seen little indication of the double stroke. I have frequently subjected my hand and hat to the blows, and have never felt the hind toe or seen the mark of it. The three anterior claws, or one, or two of them, sometimes inflict scratches, and sometimes the blow takes more the form of a pat; perhaps according to the way in which it happens to be received, for the aim is very bad, and often, I can only speak for daylight, very wide of the mark. As to the force and effect of the stroke, I have not seen it draw blood, though it once nearly did so on the tender side of my wrist; were the claws less blunt, the scratches would probably be severe.

I may here mention the highly amusing scene which occurs when the keeper places his open hand upon the lower part of the bird's back, and gently pushes him forward, to bring him better into view. Kiwi-kiwi does not think of turning upon his assailant, but holding himself more upright than ever, pushes backwards with a force altogether unequal to that used against him, and serving only to give a more steady purchase to his adversary, so that he is obliged to advance with little, reluctant steps, occasionally interrupted by a stamp, for he has not time to make a full stroke whilst his centre of gravity requires such constant attention.

When he has been exposed for some time, during which, if he has not been approached too closely, he has probably maintained a sullen inaction, he begins to move his head and beak, which last he uses like the antennæ of an insect or the nose of a quadruped, but not exactly like either. He does not steadily scent about like a quadruped, but moves his beak from place to place, touching some substance or other; and then stopping for an instant, apparently to get the smell; perhaps not unlike a cat in a strange room, only that the bird does not seem to take a second or prolonged smell at the same object. In fact, his mode of proceeding is, as far as I know, quite peculiar and original. So he pokes his beak through the straw in various places, touches the ground and dwells a moment upon it, and repeats the process until, perhaps, in some part, his whole beak is buried, and this being hidden, his whiskers and small eyes give his furry-looking little head very much the appearance of that of a quadruped. He will then take a sudden rush, forcing his body head-foremost horizontally under the straw with the rapidity of flight, his legs alternately pushing behind him, with the joints in such positions and states of flexion as those of a quadruped would assume under the same circumstances. As, for instance, in the leg which happens at the moment to be hindmost, when the toes are on the ground, the femoro-tibial joint may be nearly on the same level, whilst the intermediate tarso-tibial forms an angle considerably above it. If there is plenty of cover he stops when he is quite concealed, but if the straw is scanty, he will work on even once round his box, or further. Should a bystander press down the straw before his beak, so as to defeat his purpose of plunging in at that point, he manifests great determination in attempting it elsewhere. I have not been able to make out that he ever lies under his straw, unless he has been previously disturbed.

One day he placed his beak on the door of the box which is let down upon the floor, tried it in different places, and stepped out upon

it, using his beak in every direction, feeling the wainscoting even nearly as high as he could reach; but all this with a want of discrimination which agreed with the impression of a deficiency of intelligence previously derived from his whole conduct and appearance. He had advanced some little distance from his box, with his body in the semi-erect position; he gave one the idea of his being in a state of uncertainty as to where he was, but soon seemed to recollect himself; yet, instead of going in by the way he had come out, he ran towards the back wall, then, as soon as he reached it, turned suddenly and rushed under his curtain. On this as on other similar occasions, he charged strenuously again and again, throwing himself against any one impeding his retreat to his den; and he never, in the presence of persons, shows any notion of escape from his confinement. He is not nervously timid, for he does not start at a sudden noise, though, as I shall have occasion to mention presently, he has excellent ears. It is evident that he can see by day, from his attacks upon anything brought near him; but he never looks about him, and this gives him a mopish appearance, very different from that of most birds. How opposite, for instance, to that of his neighbour the Weka, who is always turning his head and directing his eyes, stooping down to peep under or standing on tiptoe to look over an obstacle.

The mode of life confirms Professor Owen's deduction from the organization, that in the Apteryx the sense of smell is developed at the expense of that of sight; and this is associated with many peculiarities of disposition and habits.

He seems as irascible as when he first came over, several months ago; but it is fair to mention that his temper was perhaps spoiled on board ship, for his fellow-passengers are said to have been in the habit of teasing him. He does not at all know his keeper, which is not to be wondered at, considering that he feeds at night. Earth-worms, and a considerable quantity of meat cut into pieces the size of dice, are placed in his stall every evening; the latter in a corner, and the former in a flower-pot with a hole in the bottom, through which they crawl into the heap of soil which I formerly mentioned. Most of the meat has disappeared by the morning, and holes made by the beak of the bird all over the soil, show how busy he has been in hunting for worms. A track made all round his stall tells how much he paces near the outskirts of his territory. His digestion, from the quantity of food he eats, must be excellent. His droppings are liquid, like those of carnivorous birds, and each of them spreads perhaps for four or six inches square upon the bricks, the white urinous part generally

predominating in quantity. Once when I saw him mute, he shuffled a little backwards first, as some other birds, especially young ones, will do.

I have on one occasion lately seen him eat worms out of my hand. I had advanced them gently to the point of his beak ; he seized one, and then relaxing the grip of his beak and darting it forwards, and now closing it again upon the worm and drawing his head backwards, repeating these movements three or four times in rapid succession, he moved the morsel up to his mouth, and perhaps, with a slight shake, such as a dog gives a rat, and then with a gobble gobble like a young rook only much less loud, and with several snaps of the beak fainter than those I have before described, greedily swallowed it down. I do not know that there was anything different from the ordinary mode of seizing and swallowing food as practised by long-billed birds, only the way in which he brought it about reminded me of the unconscious promptitude with which a newly caught mole or shrew rarely fails to fall upon a worm presented to it. Another time, before a number of people, he gave a most ungracious kick when a smooth caterpillar was held to his nose.

There is, however, much which it is not fair to judge of by day. An animal awakened from its sleep might well appear stupid and sullen ; its eyes might be dazzled, its paces might be unnatural ; in short, it was most desirable to see him quite unconstrained at his proper time for action, for his whole conduct and character might then appear different, and then only could his mode of finding his food be fully ascertained. I have now twice had the privilege of so watching him when he believed himself unobserved. A lamp had been suspended for several nights in front of his cage, to accustom the Kiwi-kiwi to it, when I had the pleasure of accompanying a distinguished member of the Zoological Society on a nocturnal visit early in February, on which occasion we saw the bird to advantage : but I will rather describe what happened at my second lying in wait, which took place in the evening of February 28, 1852, and was on the whole more successful than the former one.

I took my seat in front of the stall as it was becoming dark, having a bull's-eye lantern on the ledge before me, so that I could not possibly be seen by my quarry. The first sounds proceeded from the Weka ; he had hopped upon the shelf at the back of his cage, and remained in the full light of the lamp troubled with a fit of sneezing ; previously to this, however, he had raised one of his powerful series of cries. Not long afterwards my attention was called to rustlings in

the box of the Apteryx, which showed that he was on the move, and for some time I continued to hear snaps of the beak, from which I concluded that he might be preening his feathers, an operation I have never been so fortunate as to see him perform, but for the facilitating of which he is described as being, like other birds, provided with an oil-gland. Presently he put his head under the curtain and stepped out, feeling his way, or smelling it, with his beak. He advanced towards the front in the dim light, his body rather rounded, his hind quarters reminding one of a bear's in contour, his head lower than his back, and his beak dotting about from spot to spot, actually touching the ground, as was perceived plainly enough by the tap when he was on wood; and scenting also, as was inferred from the slight delay on each point, and from the little snuffle which often followed it, apparently to clear away any dust which might have got into the nostrils. Not unfrequently he walked about without any of this investigation, the point of the beak however being seldom raised far above the ground; I have never seen him use his beak as an assistance to progression, at any time.

Once or twice he shook himself, but not in a remarkably vigorous manner, as his development of cutaneous muscles might have enabled him to do. Several times he scratched his chin smartly with the claws of one foot. He was not long before he paid a visit to the heap. He inserted his beak into the flower-pot and ate a worm, but then immediately began to examine the soil in preference to adopting so lazy a mode of getting his breakfast, for that there still were worms in the pot was proved by his presently returning to it and eating another or two, although they might not be such healthy and well-seasoned ones as he procured elsewhere. I was much pleased to find that I could turn the full light of the bull's eye upon him without disturbing him, so that I was able to see his movements sufficiently distinctly.

Standing with one foot a little in advance of the other, and holding his beak in a more or less slanting, or again in a nearly upright position, he pushed it into the ground by a succession of four or five shoves, following one another at intervals of something less than a second of time, each of them accompanied by a slight sound just audible to me, but whether caused by the friction of the beak against the soil or by a sniff underneath it, I cannot say with certainty. In this act the whole body, head, and neck, moved together, the feet appearing to be the pivot on which all turned, and there was not any drawing back to get an impetus for each new shove. At last, withdrawing his beak, he was heard to swallow a worm with the usual snaps, or, if unsuc-

cessful in finding one, at least to give a little sneeze to clear the nostrils. He then perhaps takes a step in advance, and applies his nose very deliberately and attentively to several parts of the soil; almost seeming to listen, but never approaching his ears to the ground or turning his head on one side. Repeating the pushing, he may almost bury his eyes before he reaches the worm, and sometimes he has to give one or two lateral jerks, to obtain room to turn his beak into a new direction, for he seems to be following his prey by scent under ground. The soil is so light as to offer little resistance, being for the most part imperfectly decomposed vegetable matter. He employed himself in this worm-hunting for a considerable time, leisurely examining the whole heap. More than once he stretched himself, standing on one leg, extending the other behind, and protruding his neck and body in front to their utmost extent. But a partial stretching of the leg behind was frequent, an action accompanied, in other birds, by an extension of the corresponding wing. I had many opportunities of observing that his sense of hearing is acute, for if I made the slightest unusual noise, he stopped in whatever he was about, and remained perfectly motionless for a few seconds. All the while the only sounds heard from him were the scarcely audible rub made by the penetrating beak, the snapping of the mandibles as the worms were being swallowed, or the snuffle as he brought his nostrils above ground after each act of exploration. The light thrown just upon the extraordinary-looking being, gave a very striking effect. His long legs and beak, his unearthly figure, his quiet mysterious movements, just visible upon the black soil, made one think of warlocks and such "lang-nebbit things;" and then again of the sailors in the New Zealand yarn, who lay out to wait for a Moa, and on seeing it come out into the light of the moon, were afraid to fire.

When at length the Kiwi-kiwi left his hunting-ground, he came forward to his larder and ate one or two bits of meat, apparently finding them not by the eye, but by the sense of smell, for he did not at once direct his beak to them, but kept dotting it about until it alighted on them; though at this time I think the light was not in his eyes. Soon afterwards he went to the wainscot to my left hand, and ran backwards and forwards along it for a short distance, turning round awkwardly towards the wainscot, so that his beak clattered against it and got in his way. He ran quicker and quicker, until his legs slipped from under him in a sudden turn, and he fell sideways. He recovered himself immediately, and trotted rapidly into his box. It is probable that the light, or some movement I had made with it, had caused a

sudden panic, or confused him ; but I have seen him running backwards and forwards against the wall when disturbed in the day-time. In his box I presently heard his beak snapping at the rate of four or five to a second, for several seconds together, as I had never heard it before. In a few minutes he came out again, quite composed, and strode about, following his old occupations.

I have before alluded to his principal modes of progression, but cannot hope to give an accurate idea of them. His fastest pace, if I understand it rightly, is made up of a succession of rapid strides, causing the continuous advance of the body in a scarcely undulating line, both feet never being off the ground at once. But a more ordinary pace is a kind of elastic trot, which I have heard compared to that of the Cassowary, and which is characterized by a slight approach to the bounding action which most persons are familiar with in the Ratel, but I cannot say that it is produced in the same way, for I have not been able to analyze it satisfactorily in the disadvantageous circumstances under which I have generally seen it. In none of the paces is there anything approaching to a strut or a play of the head and neck, or to any of the more elegant modifications of terrestrial locomotion observable in other birds ; on the other hand, there is no waddle, and nothing like a series of hops. Tail there is none to jerk or spread ; the wings are invisible, and the feathers I have never seen to be raised or lowered to give expression, unless perhaps those of the neck. The principal variety is in the relative position of head, neck, and body. The bird can run in the most elongated upright posture, and generally does so when disturbed ; but the more contracted mode of carrying himself, with the head below the level of the top of the rounded back, is adopted for ordinary progression.

All the time I was watching him he uttered no cry, nor have I or the keepers ever heard him make any sound, except the growl, which it would be too great a compliment to designate a war-cry. He did not use his feet to scratch up or scrape the soil, and as he has never done so, so far as I have heard, there appears little likelihood in the account that he burrows in the ground in his native country—his long beak would probably be in the way were he to attempt to do so. As it has, I believe, elsewhere been suggested, his habits are probably in many respects like those of the hedgehog, of which animal he has often put me in mind, and, like it, he may make his lair in corners in a good thick cover, such as the fern-thickets of New Zealand afford.

With respect to his food ; various kinds of insects have been found in the stomach of those which been dissected, and our bird has been

known to eat grubs, very young mice, pieces of meat, and worms, being especially fond of lob-worms. His mode of piercing the ground seems to be too zealously practised not to be a constant habit, and it is probably amongst decayed leaves and vegetable matter that the *Apteryx* principally obtains its food. Mr. Yarrell describes a valve in the *Apteryx australis* which would be pressed against and cover the nostrils in the operation; but Mr. Owen speaks only of the form of the bones as affording some protection in *A. Mantelli*.^{*} It is at all events not very obvious externally, but it is difficult to understand how stoppages of the nostrils should not be constantly occurring unless there is some such safeguard. I do not remember ever to have seen either snipes or woodcocks in the act of piercing the soft ground; it is probable that they do it by bearing forward the weight of the body as the Kiwi-kiwi does, but whether the different sense which predominates in their beaks does not cause some departure from the exact method in which the Kiwi-kiwi operates, remains to be learned. I am not aware that water has ever been offered to him; it would be interesting to know whether he would ever drink or wash.

I have never observed any use made of the little claw at the end of the wing, which is too feeble to be available for defence. This claw is probably only a development showing the relationship of the wing to the legs, or, when compared with other animals, to their fore legs. A similar claw is attached to the longest digit of the wing of a nestling eagle.

I have only to add that one of the keepers tells me he has seen the *Apteryx* lie on its side, and strike out like the Rat Kangaroo; but I

^{*} Dr. Mantell remarks, in speaking of the "common species" of *Apteryx*, having just before mentioned the three species, that "the nasal apertures are at the base of the beak; * * by a strange mistake the nostrils are stated by authors to be at the extremity of the beak."—(*Fossils of Brit. Mus.* Oct., 1851, p. 107). Mr. Yarrell had described the nostrils as opening at the end of the beak in Lord Derby's original specimen of *A. australis*. Mr. Owen, after a careful dissection of what is now called *A. Mantelli*, had described them similarly in this bird; and, if my memory serves me, Mr. Gould had given no hint of any other mode of formation in *A. Owenii*. Dr. Mantell's more recent assertion must not lightly be passed over; and I see that in a specimen of the true *A. australis* in the British Museum, there is, in addition to the openings near the tip of the beak, an appearance of two tubes between the cere and the base of the beak, such as is not observable in *A. Mantelli*, which however is the "common species." I have not yet examined this curious though perhaps fallacious structure. Mr. Bartlett, in the paper read before the Zoological Society, in which he established the two species, and spoke amongst others of Dr. Mantell's specimen of *Apteryx australis*, made no allusion to any difference in the nostrils.

believe he saw it only once. He also on one occasion, when the box was opened, found it lying upon its side, with its legs stretched out. These actions however I have not seen.

There are many points which require a better description than I have been able to give, and especially the paces, the positions, and the general expression. Some good paintings would be far better than any other means of explanation, and are indeed indispensable accompaniments of a complete history for the benefit of futurity. One considerable addition to our records will be a series of foot-marks, which Mr. Mitchell is, I believe intending to obtain.

Many more particulars in the habits of the Apteryx, especially of it in a state of nature, remain to be observed; and indeed something of its nidification is already known in this country: but some of the peculiarities which I have endeavoured to describe, are sufficiently remarkable, and their duration amongst the things that are is sufficiently precarious, to engage the services of more capable pens than mine.

JOHN WOLLEY.

21, Cambridge Terrace, Hyde Park,
March, 1852.

The Cuckoo. — As this bird will make its appearance in April, it is probable that some of your readers may like to have an account of a young one reared in the nest of a hedgesparrow. Many years ago, when a boy, I was on a visit to a relation in Northamptonshire, and a young friend and near neighbour of mine, with whom I sometimes used to go birds'-nesting, came and informed me that he had found a cuckoo's egg in the nest of a hedgesparrow. In process of time the young *monster* was hatched; my friend then provided an osier cage, and placed the nest and bird in it near the spot. The old hedgesparrows regularly fed the bird until it was *six weeks old*, apertures in the cage being left just large enough for them to pass through. It then became more voracious than usual, and was evidently too much for the poor foster parents, who seemed to feed it with small insects and caterpillars, as far as could be observed. One morning my young friend visited the cage, and found one of the old hedgesparrows lying dead at the bottom; he thought the cuckoo had killed it, but I rather suspect that the bird died from anxiety and exhaustion, being unable to satisfy the increasing wants of the young one; which, not being able to fly, and not being fed with its proper food, died the next day. Captain Brown, the intelligent editor of White's Selborne, says that the egg of the cuckoo is smaller than that of the hedgesparrow: as I never saw but one, and that fifty years ago, I cannot contradict his statement, but, as far as I can recollect, the egg appeared to me to be about the size of a thrush's. Now regarding the different birds' nests chosen by the cuckoo, I can vouch for three only—those of the common wagtail, the hedgesparrow and the titlark; these three birds I have repeatedly seen following young cuckoos and feeding them in the months of June and July, in various summers. The late Dr. Jenner's history of the cuckoo is cer-

tainly the best, and has been confirmed by all observant naturalists who have written on the subject. White says that cuckoos do not all sing in the same key. Some writers have asserted that the cuckoo sometimes lays its egg in the nest of a redstart; in nineteen cases out of twenty, however, the nest of this bird is quite inaccessible to the cuckoo, being in a small hole in a stone wall, a hollow tree, or some such place: I do not believe that the nest of the redstart is ever chosen by the cuckoo. This freak of Nature seems to pervade the insect race as well as birds. Thus we have among some of the Bombinatrices, the *false* humble-bee, which lays its eggs surreptitiously in the cells of the honest, industrious humble-bee, and by this artifice escapes the toil of making combs and rearing its own young. This wonderful *lusus nature* is ordained by the Great Artificer for purposes we cannot comprehend; for this false bee, although very similar, has not the requisites for carrying pollen or collecting honey, like the true insect. I trust your readers will excuse this digression from a bird to an insect.—H. W. Newman; *New House, near Stroud, March 3, 1852.*

British Species of Guillemot.—Probably some one or other of the readers of the 'Zoologist' will, during the ensuing season, visit the Fern Islands with ornithologizing intentions, permit me therefore to call their attention to the guillemots which breed on the same islet with the cormorants—the North Warmsey, (I am not sure of the orthography, but have spelt it phonetically right). I visited these islands in June last, and on approaching this particular one at what I conceive to be the usual landing-place, I saw three or four guillemots fly off, one of which came close over our heads, I could have almost touched it with a walking-stick, and this bird bore those marks which distinguish the *Uria ringvia* of Brünnich (*U. lacrymans* of Temminck and Yarrell). Now I had seen this bird rise from the islet, and marked the place, so that immediately on landing I proceeded to it, and found there, as I expected, an egg; a few yards off was another, and these were the only two guillemots' eggs we could find on the islet. The other birds we had seen did not approach near enough to enable us to discover whether or no they bore the marks of *U. ringvia*. The surface of this islet is rough, but in no case do the prominences rise very high, and the spot on which I found the above-mentioned eggs could not, I think, be more than five or six yards above the level of the water at that time, and if I recollect right, the tide was nearly out. A vast assemblage of common guillemots, as doubtless many of your readers know, breed on the two or three lofty stacks of rocks called the "Pinnacles," some considerable distance from the cormorants' station, and from the nature of the locality, one can carefully scrutinize each individual bird, but here not one having the distinctive marks of *Uria ringvia* could be detected. Now, the above observations are worth nothing of themselves, but it will be seen that, as far as they go, they are corroborative of those made by Mr. Procter in Iceland, quoted by Mr. Yarrell (*Brit. Birds*, ed. 2, ii. 461), which are to the effect that the ringed guillemot breeds apart from the common species, and at a considerably lower level. Now, if this be proved to be a constant habit of the former in all localities where it breeds, it would be considerably in favour of the opinion that it is a distinct species; but whether it is so or not, can only be ascertained by repeated observations, and these I would request any of your readers, who have the opportunity, to make, and to record their results. The ringed guillemot is decidedly not rare, and is probably to be met with on all our coasts; it may therefore, I think, be easily ascertained whether it should be regarded as a species or a variety. Most of our collectors appear to consider it as the latter only; some erase its name entirely from their lists of British birds, while others place a (?) after it, which infers almost as

much. I have no decided opinion either way, but I trust that such of your correspondents as have the opportunity will not fail to collect evidence on the subject, as it is highly desirable that the point should be settled. I may only remark, that as the bird has been described as a distinct species by great authorities, it appears to me that the *onus probandi* lies with those who affirm that it is not, and that they ought to show that they have full and sufficient grounds for maintaining that belief. I should add, that the two eggs I obtained on the North Warmsey, do not differ from undoubted specimens of those of *U. Troile*, except in being rather smaller and less pointed than the average of them; and an egg sent me last year by Mr. Procter, marked "*Hring-langlefia*," exhibits the same peculiarities as those I took, but in a greater degree.—*Alfred Newton; Magdalene College, Cambridge, March 15, 1852.*

Occurrence of Triton palmipes in Scotland.—Last April I saw *Triton palmipes*, *Daud.*, in plenty, on moors between the foot of Ben Nevis and the Caledonian Canal, and in the same little pools where the common toad was spawning. The record of any new locality is useful in tracing the distribution of a species. I have not happened to hear of this newt being found in England, except in the South and South-west.—*J. Wolley; 21, Cambridge Terrace, Hyde Park, March, 1852.*

Reported Capture of the Sea-serpent.—“Ship *Monongahela*, at Sea, Feb. 6.—A small vessel has just been reported from my mast-head, and as she is apparently bound into some of the northern ports, I intend to speak her, purposely to acquaint, through your widely diffused journal, the people of the United States, of the fact of the existence and capture of the sea serpent—a monster deemed fabulous by many—but the truth of whose existence is for ever settled, and, I trust I shall be excused in saying, by Yankee intrepidity. On the morning of January 13, when in latitude 3 deg. 10 min. south, and longitude 131 deg. 50 min. west, the man on the look out, seated on the foretopmast cross-trees, sang out ‘White water!’ and in reply to my ‘Where away?’ said ‘Two points on the lee bow.’ Supposing it to be made by sperm whales, and being very anxious to obtain oil, I ordered the ship to be kept off, and immediately went aloft with my spyglass. I will observe that for several days we had been struggling along with very light and baffling winds, but at daylight of the morning of the 13th the wind had drawn to the south-south-west, become steady, and threatened to blow a gale. I was aloft nearly half an hour before I observed anything like ‘white water,’ and then I presumed it to be made by a ‘school,’ or rather shoal of porpoises; but wishing to be certain, I ordered the mate, as it was seven bells, to turn up all hands, square in the yards, and send out the port studding sails. It being my breakfast hour I urged the man to keep both eyes open, and came down; but before I reached the deck my attention was called to the sudden and vehement cry of Onnetu Vanjan, a Marquesan Islander, ‘Oh! look! look! Me see!—too much—too much!’ All eyes were instantly directed to the savage to ascertain where he was looking, and then all eyes turned to the lee quarter. I had just time to see ‘black skin’ when it disappeared. The native was excited, and in reply to my question said, ‘No whale—too much—too big—too long. Me no see all same dat fellar—me fraid.’ Not being able to tell which way the animal or fish was bound, I luffed and came aback, ordering the lines into the boats and the crews to ‘stand by.’ The horizon was scanned in every direction for nearly an hour, when giving up all hopes I braced forward and went below.

The native continued to look with eagerness, pushed on by the observations of the crew, who asserted that he had seen nothing, but he proved the truth of his sight in a few minutes by uttering another cry, and with more vehemence than the first. I rushed on deck, and the first look, not a mile to leeward, rested on the strangest creature I had ever seen in the ocean. It was apparently still, but 'sobbing' up and down, as we say of sperm whales. I knew it was not a whale. The head I could not see, but the body had a motion like the waving of a rope when shaken and held in the hand. Every eye in the ship regarded it attentively, and not a word was spoken or sound uttered. In a few minutes the whole length of the body rose and lay on the water; it was of an enormous length. Presently the extremity or tail moved or vibrated, agitating the water, and then the head rose entirely above the water, and moved sideways slowly, as if the monster was in agony or suffocating. 'It is a sea serpent!' I exclaimed; 'stand by the boats.' There was a hesitancy, and the mate said, 'Of what use is there lowering for him? We only lose time, and gain nothing besides.' I abruptly checked him, and ordered all hands to be called aft. When they had mustered I told them I wished to 'try' that fellow. I urged them with all the eloquence I possessed, telling them there were but few who believed in the existence of the sea serpent, and that a wish had been expressed that a whale-ship might fall in with one of them—that if we did not attack him, and should tell of seeing him when we got home, we should be laughed at and derided—and the very first question would be, 'Why didn't you try him?' I told them our courage was at stake—our manhood, and even the credit of the whole American whale-fishery, and concluded by appealing to their cupidity—holding out that we might possibly get him into some southern port. 'I do not order one of you to go in the boats,' I said, 'but who will volunteer?' Let me say to their credit, every American in the ship stepped out at once, followed by all but one native and two Englishmen. I ordered the boat-steerers and officers to examine and see that everything in and about the boats was in perfect order. I had already jumped into my boat when the serpent began to move quite rapidly, and it was necessary to stand after him. The wind was piping up strongly, but as we gained I continued to carry all sail, hoping to be able to lower before the gale rendered it impossible. The serpent worked to windward, which compelled me to haul on the wind, and soon after I carried away my fore topgallant mast; this was most unlucky for us, and, what was still worse, we lost sight of the monster. We repaired damages with all possible despatch, and still kept on the wind, hoping to see his snakeship. In less than an hour we saw him again, but some way to windward; soon ascertaining that he partly turned, and was headed baft our beam, I put the ship about on the other tack. The wind had increased so much that I was obliged to put a single reef in the fore and mizen top-sails. The serpent disappeared for a few minutes again, but when he rose he was a mile ahead of the ship, and going slowly to leeward, having made a complete circuit. I frankly admit my hopes were feeble of ever really capturing him, and the gale made me hesitate about lowering; but the time arrived, the serpent was still, and we nearly half a mile to windward. I came to with the head yards aback to have a better control of all the ship, and told the ship-keeper to keep close to us, and by no means to lose sight of us for an instant. We lowered, myself taking the lead, and in a few strokes—the wind and sea carrying us to leeward—I told the boat-steerer, James Whittemore, of Vermont, to 'stand up.' With calm and cool intrepidity he laid hold of his iron (harpoon), and, when I beckoned with a movement of my hand, quick as thought both of his weapons were buried to the socket in the repulsive body before us.

I shouted 'stern,' but there was no visible motion of his snakeship. I shifted ends with the boat-steerer, and cleared away a lance as quickly as possible, beckoning them to pull up, that I might get a lance, when a movement of the body was visible, and the head and tail of the monster rushed as it were to 'touch the wound.' The frightfulness of the head, as it approached the boat, filled the crew with terror, and three of them jumped overboard. I instinctively held out my lance, and its sharp point entered the eye. I was knocked over and felt a deep churning of the water around me. I rose to the surface and caught a glimpse of the writhing body, and was again struck and carried down. I partly lost my consciousness under water, but recovered it; when I rose again in the bloody foam, the snake had disappeared, and I shouted, 'Pick up the line.' The third mate, Mr. Benson, caught a bight at my line near the end, and bent on his, which in an instant began to be taken out rapidly. The mate picked me up as soon as I rose to the surface, and in a few minutes all were picked up—one was severely bruised and another insensible, but he recovered and both are now well. The snake had taken my line, the third mate's, and was taking the second mate's, when I ordered the mate to bend on and give his line to the ship. The snake was sounding, and I cautioned the officers not to hold on too hard for fear of drawing the irons. At first the line went our rapidly, but decreased gradually, nevertheless I was obliged to get up a spare line out of the fore hold and bend on. For fear that the ship would by its weight on the line draw the irons, I put on several drags and gave the line to the mate, when it became stationary. There were now out four boats' lines, 225 fathoms in a boat, and two-thirds of another line, 100 fathoms more—in all 1,000 fathoms, six feet in a fathom—6,000 feet—better than one mile and an eighth, an enormous depth, and the pressure at that distance is inconceivable. It was now blowing furiously, and I scarcely dared to carry sail enough to keep the ship up, the boat was in peril, and I was obliged to take the line to the ship again, and run the risk of the irons drawing. I made the end of the line fast and took in all sail but enough to keep her steady, and waited in alarm the snake's rising, the parting of the line, or the irons drawing. At 4 p. m. the wind began to shift, which favoured us a little; at 5 p. m. it, to our great joy, began to abate. At 8 p. m. a sudden lull; line taut. The night was beautiful, sky clear, wind scarcely a breath, and sea rapidly falling. No eye was closed in the ship—we were speculating on our prey. It was evident he was on the bottom. He stayed down a long time; but on reflection I considered that was his *forte*—that he was at home there. At 4 a. m., of the 14th, 16 hours after he went down, the line began to slack, I had it taken to the windlass, when we got nearly two lines 'hand over hand,' then there came a strain again. This strain continuing, I told everybody to bear a hand and get breakfast, and just before we were through, the cook cried out, 'Here he is.' In no time all were on deck, and sure enough he had risen; but all that was visible was a bunch, apparently the bight of the snake, where he had been fastened to. I lowered three boats, and we lanced the body repeatedly without eliciting any sign of life. While we were at work he gradually rose to the surface, and around him floated what I took to be pieces of his lungs which we had cut with our lances. To make our work sure we continued to lance, eagerly seeking for his life, when he drew himself up and we pulled away, and then witnessed the terrific dying struggles of the monster. None of the crew who witnessed that terrible scene will ever forget it; the evolutions of the body were rapid as lightning, seeming like the revolving of a thousand enormous black wheels. The tail and head would occasionally appear in the surging bloody foam, and a sound was heard, so dead, unearthly, and expressive of

acute agony, that a thrill of horror ran through our veins. The convulsive efforts lasted 10 or 15 minutes, when they suddenly stopped, the head was partially raised — it fell — the body partly turned, and lay still. I took off my hat, and nine terrific cheers broke simultaneously from our throats. Our prey was dead. Luckily he floated buoyantly, and we took him alongside, and while doing so he turned over, lying belly up. Every eye beamed with joy as we looked at him over the rail, and the crew again cheered vociferously, and I joined them. We now held a consultation as to what we should do, and I had requested all hands to offer their opinions. After a short talk, all of us felt convinced that it would be impossible to get him into port, and then we concluded to try and save his skin, head, and bones, if possible. In the first place I requested a Scotchman, who could draw tolerably, to take a sketch of him as he lay, and the mate to measure him. It was now quite calm, and we could work to advantage. As I am preparing a minute description of the serpent, I will merely give you a few general points. It was a male; the length 103 feet 7 inches; 19 feet 1 inch around the neck; 24 feet 6 inches around the shoulders; and the largest part of the body, which appeared somewhat distended, 49 feet 4 inches. The head was long and flat, with ridges; the bones of the lower jaw separate; the tongue had its end like the head of a heart. The tail ran nearly to a point, on the end of which was a flat firm cartilage. The back was black, turning brown on the sides; then yellow, and on the centre of the belly a narrow white streak two-thirds of its length; there were also scattered over the body dark spots. On examining the skin we found, to our surprise, that the body was covered with blubber, like that of the whale, but it was only four inches thick. The oil was clear as water, and burnt nearly as fast as spirits of turpentine. We cut the snake up, but found great difficulty, and had to 'flense' him, the body would not roll, and the blubber was so very elastic, that when stretched 20 feet by the blocks, it would, when cut off, shrink to 5 or 6 feet. We took in the head, a frightful object, and are endeavouring to preserve it with salt. We have saved all the bones, which the men are not done cleaning yet. In cutting open the serpent we found pieces of squid and a large blackfish, the flesh of which dropped from the bones. One of the serpent's lungs was three feet longer than the other. I should have observed that there were 94 teeth in the jaws, very sharp, all pointing backward and as large as one's thumb at the gum, but deeply and firmly set. We found it had two spout-holes or spiracles, so it must breathe like a whale; it also had four swimming paws, or imitations of paws, for they were like hard, loose flesh. The joints of the back were loose, and it seemed as if, when it was swimming, that it moved two ribs and a joint at a time, almost like feet. The muscular movement of the serpent after it was dead made the body look as if it were encircled by longitudinal ridges. We were nearly three days in getting the bones in, but they are now nearly clean, and are very porous and dark coloured. The heart I was enabled to preserve in liquor, and one of the eyes, but the head, notwithstanding it is cool, begins to emit an offensive odour; but I am so near the coast now that I shall hold on to it as it is, unless it is likely to breed a distemper. Every man in the ship participates in my anxiety. 2 p. m. — I have just spoken the vessel; she proves to be the brig Gipsy, Captain Sturges, eight days from Ponce, P. R., with oranges and merchandise, bound to Bridgeport. He has kindly offered to put these sheets in the post-office when he arrives. As soon as I get in I shall be enabled to furnish you a more detailed account. — I am, Sir, your obedient servant, CHARLES SEABURY, Master, Whale-ship *Monongahela*, of New Bedford." — *New York Tribune*, copied in the *Times* of March 10, 1852. [Very like a hoax, but well drawn up. — E. N.]

Subterranean Colony of Fresh-water Mollusks.—A few days ago, while passing along the City Road, at the turnpike near St. Luke's Hospital I stopped to look at some large water-pipes which had recently been taken up to be replaced by others, and was surprized to find them harbouring great numbers of the fresh-water Mollusca, *Neritina fluviatilis* and a *Lymnæus*. From the state of the interior of the pipes they had evidently been under ground for many years; and the question arises—What did these mollusks, which were in good condition, and coloured as usual, find there to live upon in their subterranean abode?—*John MacGillivray; March 12, 1852.*

[I have since visited the spot, and find a number of species besides those mentioned by Mr. MacGillivray.—*E. N.*]

Entomological Localities. By J. W. DOUGLAS, Esq.

(Continued from page 3348).

THE DOWNS NEAR CROYDON.

"What more felicity can fall to creature
Than to enjoy delight with liberty?"

Spenser.

"The love of Nature and the scenes she draws
Is Nature's dictate. * * *
The air salubrious of her lofty hills,
The cheering fragrance of her dewy vales,
And music of her woods."

Cowper.

South of Croydon, the chalk formation rises through the plastic clay into gentle undulations, which are thickly covered with short grass, and known as "the Downs;" locally distinguished as Sanderstead Down, Riddlesdown, Stoa's Nest, Banstead Down, &c., but all presenting the same general characteristics of soil and plants. The whole district was in former time covered with dense woods of beech and oak, of which but small portions now remain, such as the Purley oaks, and the few old beech trees on Sanderstead Down. Many portions are cultivated, and the rest, scattered over with hedge-rows, thickets of thorn and hazel, juniper and furze bushes, affords fine pasturage for sheep, and "such small deer" as the entomologist loves to hunt. How long it may be ere we shall have these hunting-grounds swept from us by the advancing tide of cultivation, as the forests and prairies of North America were wrested from the red Indians, I know not; but I see an inroad has lately been made at Stoa's Nest, where many acres of surface have been burnt and ploughed up. Unfortunately, for us there remains no "far West;" and when these and other haunts have been over-run by the "pale faces" of cultivation, we, or it may be another

generation of naturalists, shall look upon British specimens of many now common insects, with some such feelings as those with which we view the remains of the mammoth or *Megatherium*. I do not think this is any exaggeration, for in many localities, Whittlesea Mere for instance, in consequence of the altered conditions induced by cultivation, many species of insects are altogether lost or become very rare. A considerable expanse of open country, however, still remains here, and will well repay an entomological search.

I have mentioned the beech trees on Sanderstead Down — glorious old trees, under whose shade I have often, when wearied with the chase, sat down to smoke the calumet of peace with all the world, and resign myself to the fancy of the hour. Here it once occurred to me, as it has possibly occurred to others, how like the history of a butterfly is that of an entomologist! In the summer he is in the larva state, and polyphagously takes all that comes in his way, or perhaps restricts his appetite to a particular class; when winter arrives he becomes a pupa, and retires to elaborate the matters he has collected; until spring calls him to return to life and sunshine, more active and capable than ever.

Just through Croydon the embankment of the old tram-way runs parallel and close to the turnpike road; it is a capital place for many insects. One of my earliest expeditions to this locality was in 1842, with Mr. Lambert, who was one of my instructors in collecting; and I shall never forget his excitement when, as we were going leisurely along near the Purley oaks, on a broiling afternoon in August, a *Colias Hyale* came dashing along, settled for an instant on a flower, and, as if sunshine were too precious for it to waste, rushed on again. "By Jove!" said he, "it's ——." He could say no more, nor did he stay to remember the name, but with hat off, coat flying, and net extended, I saw him coursing like mad up the hill. After a while he returned, flushed with victory and heat, and told me what a prize he had; in a short time we had captured several of this rare butterfly, and added a chapter to the 'Diversions of Purley,' not to be found in Horne Tooke's book.

The following are some of the more uncommon *Lepidoptera* found in this district.

Polymmatas Alsus. In a hollow on Sanderstead Down.

Demas Coryli. Larvæ on hazel; October.

Semaphora tridens. Larva on wild rose; October.

Spælotis ravidæ. Thatch at Stoa's Nest; August.

Hemithea vernaria. Hedges; July.

- Anticlea rubidata*. Hedges; June.
Bapta taminata. Hedges; May.
Eupithecia irriguata. Purley oaks; May.
 " *subfulvata*. Hedges; July.
Prodolia literalis. Flying among junipers; July.
Botys hyalinalis. Hedges; July.
Euchromia purpurana. In fields towards Coomb-hurst.
Eriopsela fractifasciana. Flying near the ground; May and August.
Phoxopteryx derasana. Blackthorn; July.
Ephippiphora? *signatana*. Blackthorn; July.
Semasia rufillana. By sweeping; July.
Coccyx strobilana. Spruce firs, Purley; May.
Dicrorampha sequana. Old tram-road; June.
Eupæcilia sodaliana, *Haw.* Hedges; June.
Chrosis rutilana. Junipers; August.
Argyrolepis Dubrisana. Old tram-way; June.
Tinea marginepunctella. Hedges; July.
 " *imella*. Stoa's Nest; July.
Ypsolophus parenthesesellus. Among furze, Stoa's Nest; July.
 " *marginellus*. Junipers; July.
Anarsia Spartiella. Furze; July.
Depressaria Ulicetella. Furze; September.
 " *Pimpinellæ*. Thatch at Stoa's Nest; July.
 " *pulcherrimella*. Junipers; July.
Gelechia distinctella. Junipers; July.
 " *sequax*. Among junipers; July.
 " *tæniolella*. On the open Downs; July.
Elachista insecurella. Among junipers, Stoa's Nest; July; August.
 " *Rhamniella*. Hedges; July.
 " *Staintoni*. Flying; June.
 " *triatomea*. By sweeping; July.
Bucculatrix cristatella. Old tram-way; June.
Lithocolletis triguttella, *Sta.* The unique specimen from a hedge, Sanderstead; May.
Pterophorus Phæodactylus. Among rest-harrow (*Ononis procumbens*); July.
 " *Galactodactylus*. Larvæ on leaves of burdock (*Arctium Lappa*), in June. They feed from the underside of the leaves, and may easily be discovered by the round holes they make.

J. W. DOUGLAS.

2, Eton Grove, Lee, Kent, March 5, 1862.

A new Method of Capturing and Killing minute Lepidoptera, Diptera, &c.—Every entomologist must at times have felt a strong distaste for the common practice of collecting Tineæ in pill-boxes. This clumsy system was long the source of annoyance to me, but accident at length furnished me with a substitute for so primitive an operation. During the early months of the year, at the time when insect life is reviving, and every species is looked upon as an earnest of returning spring, I frequently examined the minute species of Diptera haunting my windows, and sighed for some mode of preserving them in all their delicate beauty. Happening, in 1849, to possess, by a lucky chance, some small bottles, about $1\frac{1}{4}$ inch long and $\frac{1}{4}$ an inch wide, made out of glass tubing, and which were originally intended for preserving spiders, the thought struck me that they would serve my purpose. I captured several minute species of Diptera in my Lilliputian bottles, and plunging the bottles for a moment into boiling water, the specimens were instantly killed, and they were then easily mounted upon cards covered with a moderately strong solution of gum tragacanth. My success in these attempts was so perfect, that it led me to consider whether I could not apply the bottles to a more extended use. I essayed the capture and killing of Micro-Lepidoptera in the same manner, and found the specimens more easily secured, killed, and set, than by any other method I had previously tried. The only thing that remained to be done was to contrive some method of carrying the bottles in my rambles, in a state of quiescence. To this end I made a model of a small flat case in pasteboard, somewhat like a small pocket-book, and capable of holding fourteen bottles, and got a book-binder to make me a dozen similar ones, covered with leather; these I afterwards lined with "swan's-down" calico, and found them answer my purpose most admirably. The manner in which they are used is the following,—first premising that the net employed for the capture of Micro-Lepidoptera, minute Diptera, &c., is the spring sweeping-net sold by Downing, and made of strong white canvas. Starting from home with six or eight or more cases of bottles in my *left-hand* jacket-pocket, on reaching the hunting-ground, the first operation is to empty the whole of the contents of one case into my *left-hand* waistcoat-pocket, excepting one bottle, which I retain by the cork between my teeth, thus leaving both hands at liberty to wield the net and beating-stick. On a specimen being swept into the net, the beating-stick is placed between my knees, the bottle drawn away from the cork, which continues to be held by the teeth, the insect, as it mounts the side of the net, is covered by the inverted bottle, when the hand not being allowed to obscure the bottle too much, the insect flies upwards towards the light, and the fore-finger of the same hand is immediately placed over the mouth of the bottle, after which the cork can be inserted by means of the teeth, or of the thumb and finger of the right hand. The bottle is then deposited in the *right-hand* waistcoat-pocket, and so on, until the *left-hand* waistcoat-pocket is exhausted, when the bottles with their contents are transferred to the empty case, and that, when filled, to the *right-hand* jacket-pocket, and so on to the end of the chapter. I have been thus particular, at the risk of being considered tedious, knowing that many a useful scheme is often thrown aside, owing to some little error in the manipulation. Every friend, without exception, who has seen my bottles and cases used in the field, has forthwith adopted the plan. The chief advantages of it are the following. Specimens are secured with at least twice the speed as by any other method,—an object of no little importance to a man of business, who can only snatch an hour or two in the day for an entomological ramble. The interior surface of the bottles being smooth, and of a non-absorbent nature, insects live a much longer time therein, and are not battered and

broken as in small pill-boxes, rolling about loosely in the pocket. Indeed, by placing the cases in a cool cellar on returning home, I have kept *Depressariæ* &c. alive and uninjured for more than a week. The method of killing by boiling water can be followed, by which mode less injury is done to the specimens than by any other method of killing, and the insect is turned out of the bottle in the best possible condition for immediate setting. Finally, by enabling the collector to see exactly the nature of his captures, he is saved the disappointment of carrying home a great quantity of useless specimens; and when at home, if pressed for time, he can select just what he pleases to kill and set first. My order of selection is the following:—delicate *Diptera* first; then, the more minute *Micro-Lepidoptera*, followed by the larger ones; the minute *Hymenoptera*; the remainder of the *Diptera* and the *Hemiptera*; the larger *Hymenoptera*; and lastly, the small *Coleoptera* that may have been placed in the bottles during the ramble. One word by way of caution. The only families, the species of which I have found to be injured by being incarcerated in bottles, consist of a few of the larger and strong-winged *Tortrices* and the *Pterophori*; but as they batter themselves to pieces equally in pill-boxes, there is nothing here that militates against the comparative merits of the bottling system. After two years' use of the plan, I strongly recommend it to all entomologists who collect the minute and delicate species, whether of *Lepidoptera* or of *Diptera*. I shall be happy to lend to any entomologist a pattern of the case for holding the bottles as above described.—*Edwin Brown; Burton-on-Trent, March, 1852.*

Description of a new (non-patented) Breeding-cage.—Set a tinman to make a circular tin pan, about 4 inches deep, 5 inches in diameter at the top, and $5\frac{1}{2}$ inches at bottom; thus having the appearance of a truncated cone. Let the bottom be pierced with holes from within outwards. The top must be left plain, that is, *not* bordered with the bead of wire which the artizan will inevitably apply to it if not instructed to the contrary. Next procure some fine woven willow, such as is used for the foundation of bonnets, and which may be bought in sheets. Prevail upon a lady friend to cut out and sew together another section of a cone of this material; the lower diameter must be $5\frac{1}{2}$ inches, the height about 9 inches, the sides having exactly the same degree of inclination as have those of the pan. Cause a piece of flexible wire to be “whipped” round the top, to which a flat cover of “book muslin” may be stitched. The tin pan being then filled with sandy earth, and placed upon two strips of wood, to allow the air to permeate the holes at bottom, the cheapest, airiest and handiest breeding-cage known is then complete,—cost, about fourpence halfpenny,—capability, the rearing and breeding any species of *Lepidoptera*, *Diptera*, &c., excepting the *Ceruræ*, *Zenzeræ*, &c., which “crib-biting” species may be confined under a tin cover of the same shape, pierced with holes at top and sides. If it be wanted to breed *Cecidomyiæ* or *Chalcididæ*, the chip cover may be washed over with glue-size, and a piece of thin muslin being wrapped round, it will immediately adhere perfectly, and sufficiently close the openings in the chip to prevent the escape of even the smallest *Mymeridæ*; and as the uniformity of inclination in the sides of the pan and the cover insures a perfect fit on the latter being pressed down, nothing can possibly escape at the junction of the two. An entire separation of the top and bottom portions being made, when this kind of cage is opened, the contents can be more thoroughly examined, and more readily removed, than in any other kind of cage I have tried.—*Id.*

On killing Humble-bees.—An old friend once recommended me to kill *Nocturæ* by holding them for an instant close to the spout of a boiling kettle. Other methods are

I think preferable to that for killing Noctuæ, but no plan can be better for killing the large Bombi. They are dead in a fraction of the time required by the method recommended by Mr. Curtis in a previous number, and are in the finest condition for being set immediately.—*Id.*

Method of employing Chloroform in killing Insects.—I last year found chloroform very useful for killing insects for specimens; but how to use it conveniently was a desideratum with me, until the idea lately occurred of constructing a collecting-bottle with a common lamp-glass, having a perforated septum, resting upon the shoulder formed by the reduced calibre of the longer part, and having a cork fitted to each end, covering the corks first with ox-bladder, and then with chamois leather, to render them more impervious. In the larger and shorter portion of the glass I propose to place a piece of sponge having chloroform in it, which, on evaporating, will pass through the cribriform plate. Bruised laurel-leaves might be placed in the cavity at the bottom of the bottle in place of chloroform, if found to be more convenient.—*Chas. Barron; Royal Naval Hospital, Haslar, March 3, 1852.*

Captures of Lepidoptera in the neighbourhood of Putney, Surrey.—The following extracts from the records of my captures of Lepidoptera in this most accessible locality may not be without utility, more particularly to collectors resident in London:—

Orgyia Gonoistigma, male and female, June 23, reared from larvæ taken on Wimbledon Common from willow.

Leucania straminea, July, river-bank, at sugar.

Nonagria despecta, July 6 to August 9, Barnes Common, flying over rushes.

„ *fulva*, September 8, Wimbledon Common, flying.

Apamea Ophiogramma, July 14—26, among willows, flying and at sugar.

Noctua Hebraica, September 8, Wimbledon Common, flying.

Agrotis vallisera, August 14 and 16, Barnes Common and garden.

Xanthia aurago, September 25 to October 11, Wimbledon Park, at sugar.

„ *citrago*, September 6 to October 7, Wimbledon Park, at sugar.

Hadena contigua, June, reared from larvæ found on willow, Wimbledon Common.

Calocampa vetusta and *exoleta*, October 7 and 11, Wimbledon Park, at sugar.

Dypterygia Pinastri, June 22 to July 25, Collis' orchard, at sugar.

Xylina Rhizolitha, October 4 and 7, Wimbledon Park, at sugar.

Orthosia macilenta, October 6—11, Wimbledon Park, at sugar.

Pyrallis glaucinalis, July 4 to September 4, Collis' orchard, at sugar.

„ *fimbrialis*, August 20 to September 4, Collis' orchard, at sugar.

Cledeobia angustalis, July 10 to August 7, flying in the day-time and evening, Barnes Common.

Nola cristulalis, May, Roehampton Lane, on palings.

Acasis viretata, ditto.

Eupithecia venosaria, May, Putney-park Lane, on palings.

„ *subnotaria*, July 15, garden, flying.

Acidalia subsericeata, June, Barnes Common, flying.

Chesias obliquaria, May 15—29 and July 21, Barnes Common, out of broom-bushes by smoking, and on the wing.

Tortrix spectrana, June 30 to July 16, Barnes Common, flying over marshy ground.

Peronea rufana, *Hastiana* and *tristana*, October 20 to November 9, Wimbledon Common, by smoking bushes.

Peronea permutana, August 19 to September 8, Barnes Common, from *Rosa spinosissima*.

Phoxopteryx biarcuana and its variety? *subarcuana*, May 30 to June 31, Wimbledon and Barnes Commons, smoked out of saw.ow.

Cochylis Smeathmanniana, May 20 and June 1, Barnes Common, flying.

Micropteryx Calthella, May 11 and 14, Wimbledon Common, saw.ow-bloom.

Adela rufimetrella, June 4, bank of the Thames, on flowers, in sunshine.

„ *cuprella*, April 17, Wimbledon Common, beaten from saw.ow-bush.

Ypsolophus parenthesesellus, July 21 and 25, Barnes Common, smoked from broom.

Cecophora grandipennis, July 18—25, Wimbledon and Barnes Commons, from furze.

Depressaria atomella, August 6 to September 18, Barnes Common, smoked from broom.

„ *assimilella*, June, reared from larvæ found on broom, Wimbledon and Barnes Commons.

„ *badiella*, August 7—23, Barnes Common, smoked from furze and broom.

Gelechia velocella, May 16—28, July 8—18, Barnes Common, flying up in abundance in the hot sunshine from the most barren parts of the common; scarcely one can be obtained in the evening, the time given in the 'Entomologist's Companion' by Mr. Stainton, at whose desire it is that I make this correction.

„ *tenebrella*, July 21, Barnes Common, smoked from broom.

„ *Gerronella*, ditto.

„ *pictella*, July 21 to August 6, Barnes Common, smoked from broom.

—*Frederick Grant; Putney, March 11, 1852.*

Note on the Larvæ of Plutella porrectella.—As a contribution to the second edition of Mr. Stainton's 'Entomologist's Companion,' I beg to state that in the second week of February, 1852, I observed in my own garden the tops of the double white rocket agglutinated, and on examination they were found to contain active larvæ of *Plutella porrectella*. I believe there are three broods in the course of the year, as I last season observed the perfect insect early in spring, again in June, and late in the autumn. The ravages of this little pest are truly provoking to the florist, as it requires the greatest watchfulness to prevent the heart of this handsome plant from being destroyed.—*W. H. Lowe; Balgreen, Edinburgh, March 13, 1852.*

Proceedings of the Linnean Society.

February 17, 1852.—ROBERT BROWN, Esq., President, in the chair.

The receipt of a complete series of the publications of the Palæontographical Society, presented by that Society, was announced.

Read, the continuation of Mr. Joseph Woods' 'Notes of a Botanical Tour in France.'

Mr. Curtis called the attention of the meeting to the fact of a cavity being formed around *Soldanella alpina*, when flowering beneath the snow, as recorded by Dr. Lortet in the 'Annals of the Agricultural Society of Lyons.' This phenomenon was referred by M. Lortet to the development of heat by the plant.

Dr. Lankester suggested that it might perhaps be owing to the absorption of heat by the dark parts of the plant.

March 2, 1852.—ROBERT BROWN, Esq., President, in the chair.

Thomas Thompson, Esq., M.D., was elected a Fellow.

Numerous donations were announced, including several volumes of Messrs. Webb and Berthelot's work on the 'Natural History of the Canaries,' presented by Mr. Webb: and a collection of specimens of about 150 species of plants, from the herbarium of the late Dr. Sibthorp, either figured in the 'Flora Græca' or described in the 'Prodromus.'

Mr. Hope exhibited drawings of Australian Lepidoptera and their transformations, made from the living insects by Harriet and Helena Scott, with descriptions by Mr. A. W. Scott, and which are intended for publication. Extracts from a notice of these drawings by Mr. Swainson, were read by the Secretary.

Mr. Hope also exhibited a remarkably large cone of *Araucaria Bidwellii*, from Moreton Bay; and gave some interesting information relative to the dimensions attained by that tree, describing it as being hardly equal in height to the Norfolk-Island pine (*Araucaria excelsa*), although in size far exceeding all other known species of the genus.

Mr. Adam White exhibited specimens of two large Hemiptera from China, lent by Mr. Fortune. The colour of one of these (the *Eurostus validus* of Dallas), when dry, was a dull brownish red, but when alive, or preserved in spirits, the most brilliant metallic grass green: the specimens of this were both dry and in spirits. Mr. White made some observations on colour as a specific character, showing its value when derived from mechanical causes, such as the polarization of light on striated surfaces, or the filling up of cells with fluids in *Eurostus*, *Casidae*, *Scutellera*, and other insects.

Read, a further continuation of Mr. Woods' 'Notes on a Botanical Tour in France.'

March 16, 1852.—ROBERT BROWN, Esq., President, in the chair.

Among the donations was announced a posthumous work on the Palms of British East India, from the papers of the late William Griffith, Esq., by Mr. John M'Clelland; presented by the Hon. East India Company.

Read, the conclusion of Mr. Woods' 'Botanical Notes of a Tour in France.' Also, a paper 'On the Habits of *Myrmica domestica*, Shuck., and on a means of applying the industry of this minute species of Ant to the preparation of skeletons of small animals;' by Mr. George Daniell.

Proceedings of the Entomological Society.

March 1, 1852.—J. O. WESTWOOD, Esq., President, in the chair.

The following donations were announced, and thanks ordered to be given to the donors:—'The Zoologist,' for March; by the Editor. 'The Literary Gazette,' for February; by the Publishers. 'Entomologische Zeitung,' for November; by the Entomological Society of Stettin. 'Exotic Butterflies, being Illustrations of new Species selected chiefly from the collections of William Wilson Saunders and William C. Hewitson: with coloured drawings and descriptions of each species.' By W. C. Hewitson. Part 1; presented by W. W. Saunders, Esq. 'Ueber den Character der Insecten-Fauna von Süd-Persien;' von V. Kollar & Dr. L. Redtenbacher. 'Beitrag zur Entwicklungsgeschichte eines neuen Blattlausartigen Insectes, *Acanthohermes Quercus*,' von V. Kollar. 'Ueber Weinbeschädigung durch einen kleinen Nachfal-

ter, 'Tortrix Roserana, Fröl., in den Weingarten von Brunn nächst Mödling,' von V. Kollar. 'Ueber einen bisher noch nicht beobachteten Feind des Weinstockes,' von Custos Kollar. 'Beiträge zur Kenntniss des Haushaltes und der geographischen Verbreitung einiger in ökonomischer und technischer Hinsicht wichtigen Insecten,' von V. Kollar. All presented by Herr V. Kollar, Honorary Foreign Member. 'Tavola sinottica dei generi spettanti alla classe degli Insetti artroidegnati Hemiptera, Linn., Latr., Rhyngota, Fab., Rhyncota, Burm.' — Memoria del Socio attuale Signor Marchese Massimiliane Spinola, Foreign M.E.S.; presented by the Author. "A List of Insects and other Animals either injurious to Agriculture or of interest to the Farmer." By J. Curtis, F.L.S. (From Morton's 'Cyclopædia of Agriculture'); presented by the Author. A box of Insects from Hong Kong; by J. C. Bowering, Esq., Corresponding M.E.S. A box of British Lepidoptera; by A. F. Sheppard, Esq. A box of British Lepidoptera; by Mr. Douglas. Specimens of *Sirex duplex*; by J. Lubbock, Esq.

Mr. Lubbock exhibited a quantity of *Sirex duplex*, which he had brought for distribution among the members. This species was abundant in woods between Bromley and Seven Oaks, where their larvæ did much damage to larch trees; it was remarkable that in a quantity which Mr. Lubbock had reared, the proportion of females to males was 1 in 100.

Mr. Adam White, on the part of Mr. Leycester, exhibited some insects from New Holland and New Zealand, among which he pointed out *Campylocnemus Schreoteri*, *Schreibers*, as remarkable for its curved hind-tibiæ approximating to the curious, curved, sub-fossorial hind-tibiæ of the allied genus *Scaptocarenum* from New Zealand, a formation of these members not otherwise known among the Carabidæ. He also noticed *Ænigma longipenne* as an insect possessing remarkable characters.

Mr. Bond exhibited a pupa of *Sphinx Ligustri*, with the sheath of the spiral tongue distinctly bifurcate.

Mr. Augustus Sheppard exhibited a remarkably pale specimen of *Arge Galathea*?

Mr. S. Stevens exhibited beautiful specimens of *Ornithoptera Priamus* from Cape York, Australia; of *Cocytia D'Urvillei* from New Guinea; *Carabus Lafossei* from Shanghai; and *Xylotrupes dichotomus* from the North of China, near Peking. He also exhibited *Epicalia Antiochus* and *Myscelia Medea*, which Mr. Bates had observed to be sexes of one species; a thing never hitherto suspected, on account of the difference of colour and marking.

The President observed that when informed of this discovery of Mr. Bates, he had examined the specimens in the British Museum referred to these genera, and found the *Epicaliæ* to be males and the *Mysceliæ* to be females. The genus *Epiphile* of Doubleday would likewise have to be abolished, the species therein being mostly referable to *Epicalia*.

Mr. Douglas exhibited the larva of a Dipterous insect voided by a gentleman who had been for a long time in ill health. It was white, naked, and attenuated, and differed materially from the larvæ expelled from a human body, described by the Rev. Leonard Jenyns in this Society's 'Transactions' (vol. ii. p. 154), as they had on each segment a pair of minute, soft processes, fringed with bristles, which, when viewed in the aggregate, formed a double longitudinal series down the back. In that instance, also, the larvæ were expelled in large quantities, whereas in the present but few had been observed. Some medical gentlemen doubted if these were really insect larvæ; but all the members present who examined the specimen sent, agreed that it was a Dipterous larva, belonging probably to the Muscidæ. Some discussion arose on the

question how insect larvæ came into human bodies ; the prevalent opinion seemed to be that they were introduced with food : in illustration of which the President mentioned that at the Jardin des Plantes in Paris, some of the serpents that had been fed on flies, of which they were very fond, after a few weeks became greatly swollen, and shortly died, when it was found that they were full of Dipterous larvæ, which had doubtless hatched from fertile eggs in the flies on which they fed, and had caused their death.

Mr. Douglas exhibited pieces of a stem of *Solanum Dulcamara*, gathered a few days since, in which larvæ of *Gelechia costella* were hibernating.

Mr. Adam White exhibited a specimen of a *Belostoma*, an aquatic Hemipterous insect, taken on board ship near Bassorah, in the Persian Gulf : many more were reported by the captain to have fallen on the vessel from a "cloud" of them flying over.

Mr. Saunders had often seen *Belostomæ* two or three together, flying about in the evening, near Bombay ; but it was something new to hear of them in such quantities, and at sea.

Mr. Douglas exhibited a specimen of *Monochamus Sartor*, taken last year on the banks of the Regent's Canal ; and a specimen of *Coccinella Reppensis*, taken by himself last July, crawling on the ground in the hilly field, Headley-lane, near Mickleham.

Mr. S. Stevens mentioned that again for the third season he had reared *Dryophila Anobioides* from the same dry stump of broom ; and Mr. Smith remarked that for seven successive years he had bred *Ochina Ptinoides* from a piece of dry ivy-stem in his possession.

The President directed attention to the insects presented by Mr. J. C. Bowring, especially to the extraordinary parasite upon *Fulgora candelaria*, which was undoubtedly Lepidopterous, resembling a *Bombyx* or *Orgyia*, and for which Mr. Bowring proposed the name of *Epipyrops anomala*.

Mr. White alluded to a collection of insects sent from China by Mr. Fortune, in which he had seen *Dicranocephalus Wallichii*, hitherto reputed to have been found in Nepaul.

Mr. Curtis read a paper on a method of removing mouldiness from preserved insects, by means of the vapour of boiling alcohol, applied by an apparatus which he described, to a whole drawer-full at a time, and in the course of a few minutes not a trace of mould would remain, and not one of the insects required to be touched or removed.

Mr. Desvignes remarked that he had operated on some mouldy insects with naphtha in which a small portion of corrosive sublimate was dissolved ; but although an effectual method, it occupied a long time to wash each insect.

Mr. White, with reference to methods of preserving insects, said that the Italians had a mode of preserving Crustacea so that the joints remained flexible ; some specimens in the British Museum, received from Madame Power, had been thus pliant for years. The means by which this was accomplished were not known.

Mr. Douglas read the following translation from the Stettin 'Entomologische Zeitung,' premising that it referred to an insect, still one of our rarest Lepidoptera, and trusting it might be the means of many specimens being captured.

"The Larva of *Phorodesma smaragdaria*, (*Esper*). By G. Koch, senr., Frankfort-on-the-Maine.

"Hitherto this larva and its natural history have been entirely unknown ; neither Ochsenheimer, Treitschke, nor any other author has given any account of it ; if they

had, the perfect insect would probably not be such a rarity. The moth flies in woods late in the evening, on which account it is seldom taken; and the larvæ are so deceptive to the eye, that they have hitherto eluded all search for them. The merit of solving the riddle belongs to Herr Verwalter Muhlig, who succeeded in finding an impregnated female, which laid eggs, by which circumstance we were put upon the search, and now we find the species not uncommonly in our town woods. I give the following account with this remark, that although it is made exactly after nature, everything is not to be found therein which may be observed with a lens in these most remarkable larvæ. Besides, the matter is sufficiently interesting to render it desirable to be acquainted with the details of the natural history of these larvæ, otherwise than in fragments, as at present, and to learn some particulars about their early states.

"As soon as the larva leaves the egg, it loads its body with finely bitten pieces of stems of plants, scales of flowers, hard, dry, seed-capsules, and other small vegetable fragments, which it binds together strongly, although loosely, and in layers, and forms into a mass full of points and projections (requiring much trouble to pull to pieces with pincers), the whole of which it carries about with it, like the allied larva of *Phorodesma Bajularia*. This covering is, however, very different from the cases of the *Psychidæ*. The larvæ enlarge these coverings according to their requirements, and as they hibernate in them when very small, it is not easy to rear them from that state. The warmth of spring entices them out to the plant on which they feed—the milfoil (*Achillea Millefolium*); when reared in confinement, however, they will feed upon *Poterium Sanguisorba*. The head of the larva is small, and the fore part of the body is also slender; the hinder part is crossed all over with deep wrinkles and corresponding elevations. Beyond the first segment, the body is flattened on each side; on the back stand four elevations or humps, each terminated by a sickle-shaped hair; a smaller hump stands on each side of the large black spiracle: these six humps, each on a distinct segment, are separated by long furrows, the remaining space is covered with innumerable little warts, which make the larva feel rough to the touch; viewed with a lens, these look like the deep-cleft bark of oak trees. All the remaining segments are covered with these elevations, points, humps and furrows, to which, as may very easily be observed, the little bits of plants are fastened in layers of small bundles. The larva is earth-brown, a long darker line is on the middle of the back, and three, more or less clear, long streaks on each side. It attains eventually the length of a Paris inch, but sits always in a contracted position, and this, added to the unyielding nature of its case, gives it a most deceptive resemblance to a hard seed-capsule or a little mass of flowers.

"When about to go into the pupa state, it seeks a hard flower-stalk, on the top of which, or sometimes only high up thereon, it makes fast fragments of flowers in the form of an open-work case, in which, in about a day, it changes to a pupa, and within three (seldom four) weeks, it appears in the perfect state.

"Light places in woods, plains, and dry ditches in woods, where the plants grow on which they feed, are the favourite localities of these caterpillars. When once one is discovered, several more may certainly be found in that neighbourhood. The best season to seek them is from the beginning to the middle of June, when they have become full fed, and are approaching their transformation. For this purpose it is not necessary to use much apparatus, for if care be not taken, they are very easily deprived of their artistic coverings."—J. W. D.

Visit to Teneriffe, and Ascent of the Peak of Teyde.

By JOHN MACGILLIVRAY, Esq.

ON approaching the island of Teneriffe, the famous Peak of Teyde, once adopted by geographers as their primary meridian (as we now use Greenwich), was in our instance the all-absorbing object of attraction, in connexion with a meditated ascent. The view from the roadstead of Santa Cruz, especially to one coming from Madeira, is anything but inviting; it presents a series of burnt-up hills of a reddish colour, at the foot of which the town is built. On the left some small craters, of remarkable regularity of form, attract the eye.

The town of Santa Cruz, virtually the capital of the Canary Islands, extends along the shore—protected by several batteries and detached forts—and exhibits a series of low, white-washed, red-tiled houses, with here and there a projecting tower or steeple. Landing at the mole (where Nelson lost his arm in 1797), our attention was first attracted by a string of two-humped camels or dromedaries, carrying burthens. This animal was introduced from the neighbouring coast of Africa in the beginning of the fifteenth century, after the partial conquest of the Canary Islands by the Spaniards under Jean de Betancour. The better class of houses are all built on a similar plan; a large gate-way, above which are displayed the family arms, opens into a court surrounded by a gallery, and a wide staircase on each side near the entrance leads to the various apartments, large, lofty, thinly furnished, and uncarpeted. In the neighbourhood of the town the crops of maize, four-rowed barley, potatoes, and flax, were more promising than might have been anticipated from the aridity of the soil. On the parched hills above the vegetation consists almost entirely of the large succulent *Euphorbia Canariensis*, and a scarlet-flowered Cactus or Indian fig (of American origin), the latter harbouring colonies of the valuable cochineal insect, introduced from Mexico in 1828. In one of the fields of barley I found great numbers of a locust very similar to *Acrydium migratorium*, very noisy and difficult to catch, taking flights of twenty yards at a time, and rising again on being approached. In a ravine paved with rugged blocks of stone—the dried-up bed of an occasional torrent—I obtained specimens of a lizard (*Lacerta Galloti*), and a gecko (*Platydictylus Delalandiæ*): also two land shells, one (*Helix plicata*) was rather plentiful under stones, the other (*H. lactea*) seemed to be rare. The first of these lizards is very common in Teneriffe (where it supplies the place of the Madeiran *Lacerta*

Dugesii) in stone walls, upon sunny rocks, and house-tops, where it sits motionless with extended tail and uplifted head, darting off with great velocity upon the near approach of any one, but stopping now and then to look back. It bites hard when seized, and holds on with great tenacity. As usual in the genus, the tail breaks off easily and is reproduced. My largest specimen measured 10 inches in length. The gecko is a common inmate of the houses, and from its usually sluggish motions the agility it displays in catching flies is surprizing. It creeps stealthily along the walls and ceilings until close to its prey, when within reach it makes a sudden dart, and seldom misses the object or fails to secure a footing after making the spring. In the town a capital inn, kept by an Englishman, furnished us with the requisite accommodation; a magnificent Acacia, several fine bananas, and a beautiful palm, growing in the court, were much admired.

In order to ascend the Peak of Teneriffe one must start from the town of Orotava, on the opposite (or northern) side of the island, distant from Santa Cruz about 25 miles. Horses having been procured, with a boy or lad on foot to accompany each and carry part of the luggage, we left Santa Cruz on the morning of April 30th. Passing some large water-tanks on our left (necessary for the supply of the town on account of the occasional long droughts), for a few miles we traversed a wide road well paved with rough stones, as in Madeira and the Azores. At a small venta (or roadside tavern) we stopped to look at a group of peasantry on their way to market, breakfasting outside upon a mess of maize-meal and cold water stirred up together, and some scraps of fish cooked over a little charcoal fire. Several vultures (*Neophron percnopterus*) were seen hereabouts. A mile of road worn out of the rock, and looking like the dried-up bed of a torrent, brought us, still ascending, to the commencement of the elevated plain of Laguna, and soon afterwards we entered the city of the same name, nominally the capital of the island, and reputed to contain a population of about 10,000 souls. But the place seemed nearly deserted: grass was growing in the streets and weeds on the walls and house-tops—a few wretched shops only were open, and few people were to be seen out of doors. The principal square contains some large public buildings, and mansions of the old nobility, some of whom still live here in a state of seclusion. Fields of luxuriant lentils, maize, rye, barley, and flax, all in full flower, made the whole plain of Laguna appear one large garden. Few trees occur to vary the scene. At one place we passed between rows of the Great American Aloe (*Agave Americana*) used as a fence. The botanist would have been delighted with

the way-side plants, and the ferns on the walls and rocky banks, and the butterfly-collector might have found ample employment here among species of *Colias*, *Lycæna*, *Polyommatus*, *Vanessa*, &c., not forgetting my old Anglo-Australian friend, *Cynthia Cardui*.

Upon reaching an elevated ridge we came in sight of the sea and the northern coast of the island, while almost at the same moment the cloud-capped Peak of Teyde threw off his snow-white mantle for a time, and stood proudly revealed in all his colossal grandeur. When the plain of Laguna was passed, we commenced our descent by a narrow winding path along the side of the mountain ridge of the island. At one time we rode through lanes fringed with brambles, at another along a narrow path worn out of the bare rock — crossing occasional ravines the banks of which were hidden by the luxuriant vegetation—large Cactuses and Euphorbias, tufts of a splendid purple Aster, St. John's wort with bunches of large yellow blossoms, tall Arums, clumps of arborescent heaths, and shrubby evergreens. In some of these sheltered dells numerous butterflies (especially a *Mancipium* like *Daplidice*) were flitting about among the flowers — large dragon-flies (*Æshna*) hawked about all glittering in the sunshine—and, deeply hid amongst the thick foliage, many a tiny warbler poured forth his joyous song: among the last I thought I recognized *Melizophila provincialis*, our well-known Dartford warbler. From its steepness, the road in places seemed impassable for horses, yet they seldom stumbled, if allowed their own way. We passed the little village of Matanza — a name commemorative of a great slaughter of the Spanish invaders by the Guanches, the Aborigines of the island, the last remnants of whom, not removed into slavery, gradually became assimilated with the conquering race.

As we descended, the valley of Orotava seemed to increase in beauty as each successive feature of the landscape became more distinct: — the whole appeared in a state of high cultivation; vineyards, gardens and fields occurred in rotation, ornamented too by the sprinkling of wood and the occasional date and other palm trees. Some of our party having accidentally found their way to the Villa (city) of Orotava instead of the Puerta (port), or the upper instead of the lower town, were gratified with a view of the famous Dragon-tree, supposed to be one of the oldest vegetable inhabitants of our globe. At length, however, we all found our way to the Port of Orotava, and met at the only hotel in the place, where our endeavours to make ourselves understood in a mixture of English, Italian, and French, with the slightest possible sprinkling of Spanish — certainly not the purest Castilian

—were ludicrously amusing. At length, however, everything was put to rights by the interpreting of an English gentleman who came to our aid, and an Irish priest who dropped in upon us towards evening. The necessary arrangements for the ascent of the Peak were made, the guide who is usually employed having undertaken for a moderate charge to furnish horses and attendants, assuring us that although no successful attempt had been made so early in the season, yet the apparent absence of snow upon the Peak and the state of the weather were favourable for our purpose.

The Port, or lower town of Orotava, said to contain a population of about 4,500, presents a neat and clean appearance. In the houses the lower half of the windows is occupied by a pair of wooden shutters, in the centre of each of which a smaller one, opening from within, serves the inmates as a peep-hole, and the owner of many a pair of bright eyes spends hours together at this post. Of two large squares, one, the Alameda, with seats and rows of trees, is the principal resort of the inhabitants of an evening; the other, used as a market-place, has a fountain in the centre, the principal church on one side, and a large convent on the opposite. There is no harbour here; vessels anchor in very deep water, and an opening in a long range of breakers upon some sunken rocks forms the only communication with the shore. Wine is the principal article of export from this side of the island.

The beach to the eastward of the town was strewed with broken *Spirulæ* and *Janthinæ*, and almost every stone and clod of earth in the adjacent fields harboured a large and a small beetle of the family *Blapsidæ*. After dusk, the loud clear chirping of numerous crickets perched upon the house-tops, was continued all night long; and to complete my entomological reminiscences of the day, the first mosquito I had heard paid me a visit, and became an uninvited and unwelcome guest.

Next morning at 9 o'clock our cavalcade assembled, and in its progress through the streets was a source of great attraction to the good people of Orotava. There were eight of us on horse-back, and an attendant on foot accompanied each cavalier. The commissariat department brought up the rear; five pack-horses carried our blankets and great coats, besides provisions, six small casks of water, and a large jar labelled "Teneriffe." Passing through a succession of vineyards, gardens, and orchards, we left the cultivated grounds, and entered upon a wild and rugged ascent overgrown with a tall heath, fern, and laurel-like evergreens. We crossed several ravines devoid of

water, with a smoothly swept rocky bed in some places and large boulders in others. Of birds we saw some vultures, red-legged partridges (*Perdix petrosa*), blackbirds (*Turdus Merula*), and some canaries, the last very different in colour, however, from the well-known domestic variety, for the wild bird has the bright yellow of the other either olive-green or greenish yellow.

At 20 minutes to 10 we entered a stationary fleecy cloud covering the whole side of the mountain, and received a copious deposit from the moisture it contained in a state of suspension. In half an hour more we got into a still more rugged and barren tract, where the heath had become superseded by a bush resembling juniper — indicating another zone of vegetation. Emerging from the bed of a ravine, and attaining the shoulder of the mountain the sides of which we had just ascended, a strange view presented itself. The noble Peak of Teyde lay right before us, rising in a huge mass from a desolate tract strewn with yellowish brown pumice — its continuity broken by projecting masses of dark lava and basalt assuming the most fantastic shapes — at one time forming ranges of tall columns, at another appearing like groups of weather-beaten ruins. Here and there a smooth and perfectly formed cone rising from the plain silently spoke of clouds of smoke and ashes once sent up from its summit to darken the air, of flames, and torrents of molten lava, of earthquakes, and the effects of long-pent-up subterranean fires. The vegetation of this dreary tract, — the Llano des Retamas — is limited to scattered bushes of juniper, and the retamas (*Spartocytisus nubigenus*), a kind of broom, with white odoriferous flowers.

At noon we halted for refreshment (thereby attracting the notice of a kite (*Milvus regalis*) which had an eye to the scraps), and after a good roasting from the fierce rays of an unclouded sun, resumed our march amidst clouds of dust raised by the horses' feet. For several hours we continued traversing this dreary pumice-plain, unenlivened by a single living creature not belonging to our party, with no other vegetation than bushes of retama, the juniper having entirely disappeared. At length, passing some pumice-covered hillocks and immense isolated blocks of dark rock — apparently shot into their present position from some neighbouring crater — we reached the base of the great central elevation of the island, or the Peak itself, which we began to ascend by a zigzag path. Here at the height of about 9,000 feet the beautiful *Viola cheiranthifolia* (peculiar to this spot) grows in small tufts among the pumice. Our horses were now completely worn out and we dismounted and dragged them along, until at a quarter past

3 o'clock we reached a cluster of three great rocks indicating l'Esterancia de los Ingleses, or the "resting-place of the English." Here we were to halt for part of the night. Under the sides of these rocks are various hollows, which serve as sleeping-places and stables; one of these, protected by a low wall of loose stones, we chose for our bedroom. A large fire of retama bushes was speedily kindled, hot tea and coffee were prepared, and the horses had large quantities of ice given them as a substitute for water.

Shortly after sunset, and while the whole of the island at our feet was rendered indistinct by the approaching darkness, the gigantic shadow of the Peak thrown upon the clouds extending far above the eastern horizon, formed one of the most imposing sights I ever witnessed—one more like a spectral illusion than a natural phenomenon. Rolling ourselves up in our blankets, and taking up positions with our feet towards the fire, we gradually dropped off to sleep.

At 2, P. M., we were aroused, and soon afterwards started by starlight to complete the ascent. The horses, one of which had died during the night, remained at the Esterancia, and the chief guide alone accompanied us, having previously furnished each with a long staff. At first a winding path led up a steep slope of loose pumice and fragments of rock; to this succeeded long ridges of black lava, the intervals between which were filled with blocks of the same firmly wedged together. In this wild region so great is the sameness of appearance that the guide frequently missed his way. After numerous halts, the whole party began to complain of fatigue and sickness of stomach in various degrees, the latter partly owing to the rarefaction of the air. We were in hopes of reaching the summit before sun-rise, but the exhaustion of one very corpulent member of the party detained the rest too long for that; still it was a noble sight to see the upper limb of this glorious luminary rising as with a sudden start: the summit of the Peak was bathed in a flood of light, while the rest of the island lay in deep shade.

Small patches of snow and ice appeared at intervals, and the breeze which blew strongly all the morning kept us quite cool. At length the last shoulder of the mountain was passed. Near the foot of the cone was a small field of snow, its frozen surface covered with needle-like projections, and close by steam at a temperature of 130° issued from an aperture in a rock, the thermometer standing at 31° outside. Even here animal life had not ceased, as a *Colias* like *Edusa* flew past.

The summit of Teneriffe (the "sugar-loaf" of the English, the "piton" of the Spaniards) forms a nearly perfect cone, which although

about 500 feet in height, is perfectly insignificant in bulk compared with the mountain itself. The greater part of its sides is covered with small fragments of pumice, and calcined rocks with their débris in the shape of fine ashes; here and there the subjacent rock shows out, of a light gray colour, cracked in every direction and yielding readily to the touch. Climbing up the cone, from its steepness and the loose nature of the footing, proved by far the most fatiguing part of the ascent; at length the more advanced of the party reached its summit at half past 5.

The crater or *caldera* of the Peak of Teyde has a depth of about 80 feet, and a greatest diameter of about 180 yards. To the southward the wall-like side is partially broken down, probably by the last eruption, as a large stream of lava can be traced as far down the side of the mountain as the pumice-plain, where it spreads out into a field. Descending the wall-like sides, we found the bottom of the crater encrusted with sulphur averaging two inches in thickness. When a stick was thrust into this, the lower surface presented a beautifully crystalline appearance, but was insufferably hot to the touch. Under this crust—which was generally sufficiently firm to bear our weight—a soft blue clay impregnated with sulphur extended as far as we could introduce a pole. Jets of sulphureous vapour issued from orifices in the crust and fissures in the rock: one of the latter, if plugged up with stones, in a short time ejected them with a slight report. The quantity of sulphur in the crater has originated the name of Solfatara, applied by the Spaniards to the crater. The heat was so great that we could not long remain standing in one position, and on emerging we found the soles of our shoes partially burnt through.

Meanwhile others of our party were making the necessary barometrical observations, which, when reduced, gave 12,116 feet as the height of the Peak. From an elevation so great, with the horizon distant 116 geographical miles, the eye wanders over a surface of not less than 42,638 square miles; and over that immense space the flames of the last eruption of the summit very probably were visible, when they played the part of the great light-house of the Atlantic. But of that period we find no mention in the records of history. The last eruption of Teneriffe (in 1798) was a lateral one, when large quantities of lava were emitted and continued to run for upwards of three months. Early in the last century the Peak of Teneriffe exhibited no less than four lateral bursts, the first preceded by violent earthquakes, and the last destroying the city of Garachico, on the N. W. side of the island, and filling up its harbour with streams of lava: a village now occupies the place where ships used formerly to anchor.

Our view from the summit struck me as being, probably, similar to what is often presented to a voyager in the Arctic regions. We were far above the clouds, which extended as a broken series of snow-white cumuli resting upon the sides of the mountain, assuming the appearance of vast fields of ice and snow, with great icebergs scattered about. Here and there a transient opening admitted of a peep into some sunlit spot among the lower parts of the island, miles away at our feet—the cultivated grounds, the villages and towns, and the iron-bound coast with its lines of surf. The atmospheric refraction was so great that the summit of the Grand Canary Island looming out of the clouds appeared almost on a level with us, although distant about 60 miles.

Our descent of the cone occupied but a few minutes, as guided by our poles we slid down amidst clouds of ashes, and soon reached the bottom. We then diverged to the left to visit the famous Cueva del Hielo—or ice cavern—a vast cave with an opening in its roof amidst immense blocks of rock. The bottom was filled with ice of great thickness, and the arched roof hung with icicles on which the few straggling sun-beams played with great effect. Ice is found here all the year round in sufficient quantity to supply the whole island during summer. It is brought down to the Estancia on men's shoulders, and thence on horses to Orotava, where the price is a dollar a load. The descent into the cave is made by means of ropes. The occupation of an ice-collector is said to be a most hazardous one, many of them having lost their lives during storms upon the Peak.

Mounting our horses at the Estancia we reached Orotava at 2, p. m. On our way down we had again an opportunity of observing the well-defined limits of the various zones of vegetation. Leaving that of the broom or retama, and passing through that of the tree heath, we reached the moist and usually clouded region of evergreen junipers and laurels, to which succeeded the region of culture of European plants, bringing us down to the last and lowest, that of the banana and date palm.

Next day we returned to Santa Cruz, highly delighted with our excursion, and the ship immediately proceeded on her voyage.

London, April, 1852.

Dear Sir,

In sending you the foregoing account of an excursion in Teneriffe, I am anxious to direct the attention of your readers to the facilities which now exist for reaching that fine island, and to claim for it a share of that attention which naturalists have so liberally

bestowed upon Madeira. Not that its natural productions are little known ; I need only refer (among others) to the researches recorded in Webb and Bertholet's great work on the Canary Islands for disproof of this : yet even our yachtsmen during their summer cruises, and invalids who may spend a winter there—if imbued with a love of Natural History—will find ample scope for exercising it. Of the climate I need not speak ; living is cheap ; and a visitor will meet with extreme civility among the peasantry, and find abundance of pleasant society in Orotava and elsewhere, if he chooses to look for it.

Believe me to be,

Yours very truly,

JOHN MACGILLIVRAY.

To the Editor of the 'Zoologist.'

*Extracts from the Correspondence of Mr. H. W. Bates, now forming
Entomological Collections in South America.*

(Continued from page 3324).

Santarem, Amazons, January 8, 1852.

I arrived here on the 26th of November, after rather a pleasant voyage in comparison with previous trips of twenty days from Pará. I lost only one day in the necessary business of getting a house, cook, &c., and proceeded to the woods after the *Callithea Sapphira*, but it was about a fortnight before I got any good specimens. This is quite a different ground from any station I have yet collected in, and takes some time to know how to go to work. There is very little dense forest, the neighbourhood being entirely an arid, sandy, and gravelly campo, with scattered forest, and only some narrow belts of wood ; it is not a dead level of humid country, but undulating, and has picturesque mountains within a day's walk. I think Wallace cannot have worked the locality well, although he took, as I remember, the whole series of species which he showed me at the Barra, and many butterflies that I have not yet seen. I think he was here at a better season—the fall of the river — which I know at Ega is the best season. What I send you now is not so fine a collection as I could have wished ; I have devoted myself to getting, first, a good series of the beautiful *Sapphira*, which you wished for more particularly ; I hope what I send will satisfy you. Perfect specimens are *very rarely* to be met

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with ; in showery gloomy weather, in certain parts of the woods, it is certainly not uncommon here, but it is difficult in the first place to take (especially the male), on account of flying high, and very few turn up fine when taken, three-fourths being imperfect. I have selected the best, and thrown many away ; for *perfect* specimens you must keep up the price, as I am sure they will always be valuable. Do not think it an abundant species because I now send you so many ; it is because I devoted myself *one month* to them, working six days a-week with a youth hired to assist me, both of us with net-poles 12 feet long. With respect to the rest, I send no private collection this time ; the unique specimens, which contain many beautiful things new to me, I keep at present for comparison, those I send having numbers can be sold, the numbers referring to the notes I inclose : there are many new to me. The Coleoptera, although small, I hope will prove good : two or three Libellulæ I send for the first time.

My servant grubbed up a locality for shells, which I followed up in evenings after showers : one of each species, with a number, I have put in separate papers ; Nos. 1 and 3 are found concealed in the remotest chinks of trees. In fact, here only have I seen a real shell-locality, which at once appears from the number of dead shells on the ground. No. 5 is a water-shell : on land I have not seen any dead shells of species different from the other four. I conclude that in the low virgin forests there are few or no shells, as I have never seen dead shells about : here in the valleys and ravines of the mountains of the Tapajos I hope I shall get many finer and handsomer than those I now send. You can send me the names &c. of the species ; say whether rare, the price of each specimen, and if I should send more . . . The collection I pack up very carefully, wishing to keep up the name of sending good specimens.

I see no particular difficulty in exploring the Tapajos, having already one smart young Mulatto now with me, and to him I shall leave the management of the canoe, getting two Indians, &c. In two or three weeks I shall make a short trip of a few days up the river, but think it will be well to work a little longer here, as I have not yet worked the hills behind Santarem, where there are wooded dells and streams flowing beneath, forming a kind of locality I have never yet seen in this country.

H. W. BATES.

Mangrove Swamps and their Inhabitants.—The muddy shores of intertropical Australia, especially at the mouths of creeks or rivers, and along their banks as far up as the influence of the salt water extends, are usually overgrown with mangroves of one or more of about six species. Along the banks of one of these salt-water channels the trees are usually of moderate size,—sometimes mere bushes; but when the country in the neighbourhood is low and inundated at high water, they frequently attain to much greater dimensions. One may imagine an extensive grove of slender-stemmed trees, with trunks raised above the mud and water, five or six feet or more, by numerous supporting arched roots, devoid of branches until near their summits, where the dark green foliage of their large glossy leaves forms a dense canopy, casting a gloomy shade upon everything below. The singular fruit of the mangrove is sure to arrest the attention of even the most incurious. Germination commences while the seed is still attached to the evergreen stem, and it is not until it has sprouted out to the length of several inches that it drops—a young plant—into the mud below, which is thenceforth to become its nursery. These vegetating sprouts, of one species of mangrove, form a most important article of food to the aborigines of the Cape York district during the rainy season there, or between the months of November and March, both included. Large heaps of them are collected by the women, upon whom, I may mention, the procuring of almost all articles of food, except fish and game—in addition to every kind of domestic drudgery—is imposed by their lazy partners. A number of stones, the size of the fist, are heated by means of a fire made over them, and when rendered sufficiently hot, the embers are swept away, and a quantity of mangrove-sprouts placed upon the stones; these are covered over with pieces of the paper-like bark of the *Melaleuca* (the “tea-tree” of the colonists), tufts of grass, and a sprinkling of sand, in order to confine the steam arising from the soft, heated mass. After about an hour or so the mangrove-shoots are taken out, pounded singly between two stones, and the pulp, in the shape of a grayish, slimy paste, is considered to be fit for food. But, to resume.—The curious arching roots of the mangroves, of which the principal is *Rhizophora Mangle*, interwoven with each other in the most complicated manner, and affording a more secure footing than the mud in which they become imbedded, are worthy of examination. They often support clusters of delicious oysters, and many curious shells of the genera *Auricula*, *Nerita*, and *Littorina*, are found upon the root-like supporting shoots, and occasionally creep a little way up the trunks. On the mud hundreds of *Gelasimi*—the males furnished with great pincers, one of which is nearly as large as the body—may be observed scampering off to their burrows; small fishes (*Chironectes*) are leaping about in all directions by means of their strong pectoral fins, and, nowise incommoded by the temporary want of their native element at low water, even seek refuge on the *trunks of the trees*; and occasionally one may detect a fine large *Cyrena*, by seeing its white, eroded umbones projecting above the surface, on which are scattered about great numbers of long, spiral, univalves—*Cerithium palustre*, *C. telescopium*, &c. Many kinds of herons, ibises, kingfishers, and other birds, obtain their food in these dismal swamps; and one may there frequently observe large fruit-eating bats (*Pteropus funereus*), three feet or more between the wings—the “flying foxes” of the colonists—suspended from the branches, and looking like strange unearthly creatures. Crossing a mangrove swamp of considerable extent is at all times an arduous undertaking, especially on a sultry day, when not a breath of air is stirring, and the fierce heat of a tropical sun raises sickening exhalations from the mud, and the stillness of these noisome solitudes is broken only by the hum of myriads of

mosquitoes, ever ready to pounce upon any unfortunate intruder upon their domain. At length, however, after much tedious wading, the monotony varied by occasionally finding one leg stuck fast in the mud up to the knee and the other entangled among the mangrove-roots, one manages to scramble through to the other side. But his friends the mosquitoes are by no means inclined to leave him. Face, hands, and every vulnerable part of his body, are covered with them, and he quickly finds that even his clothing affords no protection from their bites. Nor are mosquitoes in Australia confined to the tropics. Even in Sydney, a new arrival from Europe during warm weather is not long before he is claimed by them as an acquaintance. One has only to look up to the ceiling of any room in New South Wales, during the summer months, to observe it dotted over with these insects, gorged with their repast of the preceding night, and only awaiting the approach of darkness to take wing and search for any opening in the gauze mosquito-curtains of the bed, and then to be the tender-skinned human occupant not yet acclimatized. Next morning he finds his face glowing like a furnace, unsymmetrically swollen, and ornamented with sundry red pimples arranged in various patterns, the work of real aboriginal artists. In conclusion, I may add that the Australian mosquitoes (for there are many species) are bred in stagnant water of every description, in which they pass their several stages of larva and pupa. As many broods are produced in a season, even a barrel of rain water kept about a house is sufficient to furnish a constant supply of these troublesome creatures. — *John MacGillivray* ; *March 12, 1852.*

Singular Habit of a Cat. — A relation of mine possesses a cat, which has a most extraordinary habit. When a saucer of milk is given to it in the kitchen every morning, this refined cat will not lap it with her tongue, after the orthodox custom of cats, but using her paw as a spoon, dips it into the milk, and so conveys it to her mouth, thus sipping her breakfast in a very dignified manner. Now, what can be the cause of this most strange habit of the cat? I have heard it much discussed and speculated on, and many quaint and improbable solutions of the mystery given, but as yet nothing at all satisfactory to my mind. At first I thought the poor cat must have a sore tongue, or that its lips or mouth were out of order, and that it might be painful to her to lap; but upon inquiry I learned that this very ingenious theory must fall to the ground, as the cat would sometimes vary her mode of drinking, by lapping after the usual manner of cats, though her *general* habit was to lick the milk from her paw previously dipped in the saucer, as I have above described. Other ingenious persons have suggested that the cat must have imitated the servants, and learned from them whilst at tea the fashionable use of the spoon; but there are strong objections to this argument: for, in the first place, the cat is not an imitative animal, and we can hardly give her credit for such instinct, or reason, or whatever it may be called: and again, we all know after what fashion servants drink tea, namely, by pouring it into the saucer, and thence rather imitating a cat in lapping it up, than *vice versa*; at least this was the custom in my nursery days. I shall be glad if any one can offer a reasonable conjecture why this cat should adopt so strange a method at its meals. — *Alfred Charles Smith* ; *Old Park, Devizes, March 18, 1852.*

Note on the Habits of Ferrets. — Having for some years past kept ferrets for destroying rats on the premises where I lived, I have had an opportunity of observing their

habits. Until now I always considered them affectionate one to another, and therefore placed them together in one pen, male and female. Sometimes a scuffle would have taken place when they were fed, if each did not get a share; but this was merely for the food, which was given to them every evening. The food I give them consists of scraps from the kitchen, and any rats or mice we may catch. Two ferrets I have had for the last twelve months, and from them I anticipated young ones in season; but to my disappointment I found on the morning of March 9th, that the male had eaten the female, and so completely had he devoured her that nothing remained but part of the skin, the feet, the tail, and the skull without the least bit of flesh on it. I can assign no reason for this unnatural circumstance, unless it had been caused by one of the men in the garden putting in a live sparrow to them, on the previous night. If they tore this bird to pieces between them, as they very possibly did, the female might have got smeared about the head and neck with the entrails; or the male might have taken hold of the female instead of the bird, and having brought blood agreeable to his taste, commenced eating the body. What most surprises me is, that the stomach of one should be capable of holding another almost equal in size. I may here remark that this ferret, although small, will kill rats as quickly as a dog, when he gets hold of them.—*James Donald, Gardener; Knott's Green, Essex, March 18, 1852.*

Occurrence of the Fire-crested Regulus near Penzance.—I had an opportunity of examining three males and a female of this species yesterday, which had been procured by Mr. Vingoe, of this place. There appears to have been a great accession of numbers of this little bird in the western part of Cornwall, as I have heard of others having been captured near Truro during the present winter. Mr. Vingoe, whose observations are at all times accurate with respect to the distinctive characters of birds, informs me that he has observed in this species a much greater tendency to shyness and concealment than in the common gold-crest, and that there is scarcely any opportunity of getting a near approach to this bird, especially if it is closely watched. Another character which Mr. Vingoe noted respecting this species, was that it affected the higher branches of trees, whilst the gold-crest might be seen among low bushes, as well as in more elevated positions. The white mark over the eyes extended more backward in some instances than in others: all the specimens however exhibited the prominent sulphur-green tint on the shoulders, which appears to be quite a characteristic mark of the species.—*Edward Hearle Rodd; Penzance, February 28, 1852.*

Note on the Chiff-chaff.—I may add that several chiff-chaffs were seen in the same locality, and in pursuit of the same objects of food.—*Id.*

Occurrence of the Kentish Plover near Penzance.—A male specimen of this rare plover was captured to-day on the flat sands between this place and Marazion, in company with sanderlings. I have not hitherto noted this species as Cornish, and have examined the specimen in the flesh. The weight rather exceeds $1\frac{1}{2}$ oz., and I observe that although the feet and legs above the tarsal joint, are black, the tarsi are bluish gray.—*Id.; April 17, 1852.*

Occurrence of the Continental White Wagtail near Penzance.—Two specimens of this wagtail have been shot in this neighbourhood.—*Id.*

Occurrence of the Lesser Tern near Mount's Bay.—An example of this elegant tern in perfect summer plumage, was shot yesterday.—*Id.*

Occurrence of the Wood Sandpiper at the Land's End.—An adult specimen of this bird was shot at the Land's End a day or two since, and has been preserved by Mr. Vingoe.—*Id.*

*A List of the Fishes that have been found in the Moray Firth, and in the Fresh Waters of the Province of Moray.** By the Rev. GEORGE GORDON.

"FISH and Flesh," with the addendum of the anomalous "Red-herring," was the good old gastronomic classification of the Animal Kingdom. At a still earlier period, however, the gourmands, if such there were among the aborigines of the British Islands, doubtless had for a length of time almost wholly to depend for the gratification of their palates upon the *feræ naturâ* of the second of these classes—the beasts and birds of the field. The other class—the denizens of the deep, whether fish properly so called, or mollusk, or crustacean—would be despised or neglected by man until he had taken another step towards civilization, and settled down upon the river-banks and ocean-shores. There is now a complete change of place in these two divisions of the animal kingdom, as our resources for food. The waters yield by far the greater proportion of the *feræ naturâ* destined to become the food of man: the land contributing only its venison, its grouse, and its wild fowl—in short, its "game," which, even in the most favoured seasons and districts, forms now but a scanty item in the aliment of Britons. Of course the domesticated animals are here not taken into account. It is to the *feræ naturâ* that these remarks apply. And, save a few perch in a pond, or carp in a glass globe, the whole of the finny tribe roam as free to-day, and in their habits are as much *feræ naturâ*, as when the first Celt, or his unknown precursor, crossed the German Ocean, and landed on our shores. Then, being still *feræ naturâ*, the history and the habits of the fishes, even of those species that are the most common fare or the rarest of table dainties, become more congenial food to the mind of the naturalist, than the study of the overgrown and piebald inmates of the farm and poultry-yard.

Trusting that such notices regarding the occurrence of the species found in well-defined localities will not be unsuitable to the pages of the 'Zoologist' (which have not been much occupied by this particular department of Natural History), the following list of the fishes as

* In continuation of "The Fauna of Moray." See 'Zoologist,' pp. 421, 502, 551.

yet found in the waters of the Moray Firth, is laid before its readers. Mr. Yarrell's invaluable 'History' (2nd edition) is followed in the order and nomenclature adopted in this list. After the English and scientific names of the species, there are given—as far as they can be ascertained—the provincial names, Saxon and Celtic. The remarks that follow, as to the frequency, habits, &c. of the several species, unless when otherwise stated, record what has been observed upon the south-western shore of the Firth, or have been supplied by fishermen residing there.

The Moray Firth, the supposed "*Sinus Vararis*" of Ptolemy, lies on the north-eastern extremity of Scotland, and in shape and size may be regarded as an equilateral triangle, having Peterhead, Inverness, and Duncansbay-head at its angles, distant from each other nearly 100 miles. Its geographical boundaries may be described as extending from 2° to 4° West longitude, and from $57\frac{1}{2}^{\circ}$ to $58\frac{1}{2}^{\circ}$ North latitude. The Dornoch, Cromarty, and Beaulie Firths, with their ample waters, lie on the north-west side of the Moray Firth, and form subordinate bays or arms of it; but each one of them in itself a fertile field for the study of marine Zoology. The southern shore, to which this list more particularly refers, runs almost due East from Inverness to Peterhead; but, although full of little creeks or inlets, it has no such bay as any of those three to beautify or vary its coast-line, or to afford shelter to the smallest craft overtaken in a northern storm. On this southern coast of the Moray Firth, the shore is either fringed with hills of the purest sand, lined by the gravelly beach, broken in upon by the low-lying rocks, or walled up for miles by the bold perpendicular headland. Compared with the north-western boundary, and with most other coast-lines of the same length, the south side of the Moray Firth is strikingly destitute of the flat muddy shore, with its half-sunken rocks and boulders, at once so accessible and so rich in objects that arrest the attention of the naturalist. This peculiarity may in some measure be accounted for by the powerful currents (exciting the surprise and trying the skill of experienced engineers) that set in on this side of the Firth, where their force is manifested by the constant shifting of its numerous banks of sand, and at times by the transporting in a westerly direction, and raising into beaches many feet high, the masses of *débris* thrown out from the newly excavated harbour, as at Stotfield head, or from the sandstone quarries, as at Covesea. These powerful currents, so marked in the Moray Firth, may forbid the appearance of those animals that frequent the still or muddy waters of other arms of the sea, and may with some probabi-

lity be assigned as the reason why attempts to plant and rear the oyster on our coast have failed; yet they no doubt have been the cause of landing on this coast most of the larger and rarer species of fish here recorded. And it may not be considered foreign to this subject to state that in all likelihood the same cause — a strong current from the Pentland Firth setting in on the southern shore of the Moray Firth — has brought hither the sheep's scabious (*Jasione montana*) and English stone-crop (*Sedum Anglicum*), plants peculiar to the west side of the island; and also the larger West Indian seed, the horse-eye bean (*Dolichos pruriens*), which of course could find no fit soil or season wherein to germinate, as the other more hardy plants have done. If to these fishes and plants, there be added the instances on which Cetacea have been stranded on the south side of the Firth, few localities around the island will be found to have been more favoured than it by such numbers of rare visitants.

The bottle-head or two-toothed whale (*Hyperoodon bidens*), found near Nairn by the late Laird of Brodie, and published by Sowerby, was for a length of time the unique British specimen, and but few have since been discovered, (Zool. 2320). As far back as the days of Sibbald this locality for such objects was well known. He states that one of the larger whales he describes was found at the Boyne, near Banff, and another near Peterhead. A venerable and much respected citizen of Elgin has communicated the following notice of a journey he took, upwards of seventy years ago, to Covesea, where some large species of whale was stranded. As its graphic terms and pithy style illustrate in many points the days of other years, as well as state a fact germane to the matter in hand, it is given without abridgment.

“As you are desirous to have the particulars of one of my earliest adventures, which filled me with no little alarm and astonishment at the moment, I proceed to say that having made up a party of ‘loons’ like myself, about ten years old, we sallied forth one fine morning to see the wonders of the deep, in the stranded whale (making then a great noise in the country), lying on the sandy beach a little to the eastward of the rock on which the present lighthouse for the Stotfield Skerries stands. My mother, good woman, filled my pockets with bread and cheese, and gave me a penny to pay for my passage in the Salter-hill boat, from where the present brick and tile work is to the opposite shore, a distance of about two miles. The boat was dry and ‘gizzen’ [leaky], and took in too many passengers, as well as too much water at its open seams. This, with a considerable swell in the loch from a gale of westerly wind, and the over-crowded state of the

boat, excited in my green experience no little fear, and I was more than thankful to find my feet on *terra firma* once more. We dashed on then in a direct line to "The Whale," a mob of people all moving in the same direction. I cannot give the exact date of this event, but according to my calculation it happened in the year 1778. The monster lay along the edge of the water, just a little within high-water mark. It seemed to me, as nearly as my idea of measure at that time was formed, to be about 25 feet in length, and I suppose, at the thickest part (the head), might be about 8 to 10 feet high. I was amazed, as you may easily suppose, at such an enormous bulk; and disgusted and amused at once with the clumsy and awkward proceedings of the fishermen, who were cutting and hacking off the blubber with hatchets, scythes and long knives, and from its slipperiness were tumbling headlong on the carcass of the huge creature; and certainly not less so at the wonderful patience and composure with which the Dowager Lady of Gordonston watched their proceedings from her carriage drawn up on the lee-side of this stinking monster. It had come upon her jointure-land, and, determined to see it well cared for, she returned for several days until the last particle was secured.

"Having got to the end of my curiosity and of my 'prog,' I thought of home, but having no penny to pay my passage to Salter-hill, I found myself under the necessity of using 'shanks-naigie' round the east end of the Loch of Spynie, and by Oakenhead and Pitgaveny, which, in those happy days, was no great affliction."

I.—Fishes with a Bony Skeleton.

Lesser Weever, *Trachinus Viperæ*. "Stangster, Stang." Not unfrequent. The fishermen and their families consider them poisonous, and assert that "if they sting with the spike that is near the ear, the wound will fester." In proof of their assertions, they are ready to adduce instances of individuals who did not recover for many weeks. It is needless to say here that there has been no poisonous matter ever found about the spines of the weevers, and that all the reported poisonings may be accounted for by mere mechanical injury on an inflammatory habit, or by neglect of the wound upon even the more healthy.

Striped Red Mullet, *Mullus surmuletus*. Found at Gamrie (Zool. 3282), *Rev. G. Harris*.

Red Gurnard, *Trigla Cuculus*. Occasionally met with in the Firth, as at Lossiemouth, *Mr. Martin*.

Sapphirine Gurnard, *Trigla Hirundo*. Specimens of this fish have been at different times got from Lossiemouth, as in January, 1841, and in October, 1845.

Gray Gurnard, *Trigla Gurnardus*. "Girnart, Croonyal." Very common, and frequently brought for sale to the different market towns. Some of the fishermen speak of three sorts of gurnards as known to them on the coast; viz., the black, brown, and red. It is uncertain whether the species above enumerated be those meant. The red gurnards are represented as attaining the size of the largest haddock, and weighing seven or eight pounds. They are said to appear in the Firth in shoals about the beginning of June, when the first of the small herrings are seen, and seldom take a hook but those baited with herring. They are also found at a distance from land, preferring "hard" (rocky) ground. The black gurnards go with the dog-fish, following the herrings; while the brown (gray?) gurnards come to the sands near the harbour-mouth.

Sea Scorpion, *Cottus Scorpius*.

Father Lasher, *Cottus bubalis*.

Both these species are frequent along the shores of the Moray Firth, and have the name of "Sutor" applied to them. They are often taken by boys at the different harbours, and are tortured with the same cruelties as youngsters on land were wont to practise on the poor persecuted yellow-hammer.

The Pogge, *Aspidophorus Europæus*, has been met with in several instances. In January, 1849, ten specimens, from 2 to 5 inches long, were found in a cod-fish.

Norway Haddock, *Sebastes Norvegicus*. A beautiful young specimen of this very rare British fish was obtained at Lossiemouth in December, 1850, and presented by the Rev. James Weir to the Elgin Museum. It measured 8 inches in length: the dorsal fin has 12 spinous and 13 soft rays: the space between the eyes is not flat, but has a small longitudinal furrow: the elevated crest on each side of the occiput terminates in two (not in one) small spines.

Stickleback, *Gasterosteus Trachurus*. "Banstickle." Abundant in almost every ditch, pool, and stream.

Fifteen-spined Stickleback, *Gasterosteus Spinachia*. Apparently rare in the Firth, as only two specimens have as yet been discovered; viz., one by Dr. Gordon at Stotfield, in July, 1849, and the other by P. Duff, Esq., at Lossiemouth, in 1850.

Common Sea Bream, *Pagellus centrodontus*. Of late years this has been more frequent in the Firth than it is believed to have been

formerly. In 1849 many were caught by the fishermen, who give them the name of "Siller-fish."

Ray's Sea Bream, *Brama Raiti*. Found at Gamrie (Zool. 3301), *Rev. G. Harris*.

Mackerel, *Scomber Scomber*. (Rionnach,-Ronach).^{*} Occasionally found throughout the year, and sometimes taken in immense numbers towards the close of the herring-fishery in August.

The Tunny, *Thynnus vulgaris*. In the summer of 1850 several individuals of the shoal or herd which seems to have approached Britain that year, were met with in the Moray Firth. One, killed at Portsoy in a salmon-net, measured 9 feet in length and 5 feet 10 inches in girth. Another, at Clachnaharry, near Inverness, measured 5 feet in length.

The Scad, *Caranx Trachurus*. "Rock or Horse Mackerel." A few are taken every year in the salmon-net at Lossiemouth, *Mr. Martin*. Has been met with at Nairn, *Mr. Falconer*.

The Black Fish, *Centrolophus Pompilus*. A single specimen of this very rare fish was caught in a net at Lossiemouth, in 1841. It measured 14 inches in length, and was almost wholly black. It proved an object of great curiosity to the fishermen and the sailors, who declared that they had never before seen so singular a fish; *Mr. Martin*.

The Dory, *Zeus Faber*. Two specimens are known to have been killed on the Elginshire coast, *Mr. Martin*.

The Boar Fish, *Zeus Aper*. "Sun-fish." One caught by Alexander Stewart, at Lossiemouth, in 1839, and sent to the Elgin Museum; its length was 7 inches: *Mr. Martin*.

Opah, or King Fish, *Lampris guttatus*. A very fine specimen of this most beautiful fish was cast ashore alive at Port Gordon, on the 3rd of March, 1839, and afterwards exhibited in the town of Elgin, as a curiosity. It was 3 feet 10 inches in length, and weighed 112 lbs. The remains of a cuttlefish were found in its stomach. The external appearance of the sides seemed to indicate that the lateral line was branched, as single lines, smaller, but otherwise of the same external appearance as the line itself, were thrown off from it on the under side only, and were dispersed over the lower portion of the fish. Several years ago another was obtained at Nairn.

The Silvery Hair-tail, *Trichiurus lepturus*. Two specimens of a

^{*} The Celtic words are given within parentheses; and when two words are connected by a hyphen (-), the latter is an approximation to the pronunciation of the former.

fish, regarded as belonging to the genus *Trichiurus*, have been found dead on the shore of the Moray Firth, near Port Gordon, (November 1810 and November 1812). Both of them were examined by Mr. James Hoy, F.L.S., late of Gordon Castle, who gave an account of them in the Linnean Transactions. (See Yarr. Brit. Fishes, i. 205).

Regalecus Glesne. A specimen of this great rarity was cast ashore at the village of Crovie, near Macduff; and is noticed by Mr. J. E. Gray, in his 'Account of the Rare Fish caught off Cullercoats in 1849.' Mr. Martin, to whom Mr. Yarrell sent a copy of the above account, thinks there can be no doubt that Mr. Hoy's second fish above alluded to, was a mutilated specimen of *Regalecus Glesne*.

The Vaagmaer or Deal Fish, *Trachipterus Bogmarus*. "Saw-fish." One obtained at Burgh-head, in 1847, 3 feet long, Mr. Martin. One at Findhorn, Mr. St. John.

Gray Mullet, *Mugil Capito*. A few caught yearly at the mouth of the Lossie, Mr. Martin.

The Shanny, or Smooth Blenny, *Blennius Pholis*. Stotfield, 1848.

Yarrell's Blenny, *Blennius Yarrellii*. One found on the beach at Covesea, in 1839, by Mr. Martin.

Spotted Gunnel, *Murenoides guttata*. Very common in pools below high-water mark.

The Viviparous Blenny, *Zoarcus viviparus*. Common in the same situations as the former.

Wolf Fish, *Anarrhichas Lupus*. "Sea Cat or Cat-fish." (Morcan). By no means unfrequent. The fishermen say that it is more plentiful in March than at any other season, and that "some of them are as big as any cod, and are good for eating."

Freckled or Spotted Goby, *Gobius minutus*. Frequent along the shore; abundant in Findhorn Bay: often preyed upon by the haddock.

One-spotted Goby, *Gobius unipunctatus*. "The most northern locality in which it has yet been observed appears to be the Moray Firth, where James Wilson, Esq., obtained a fine specimen of 3½ inches in length," Yarrell, i. 292.

Gemmeous Dragonet, *Callionymus Lyra*. "Bridegroom." Stotfield, September, 1845. In November, 1850, Mr. Weir obtained an excellent specimen at Lossiemouth, 8½ inches long; the centre of the eye equidistant from the end of the snout and the first dorsal ray. The fishermen on the coast are under the erroneous impression that it has a poisonous sting.

Sordid Dragonet, *Callionymus Dracunculus*. Gamrie, Rev. Geo. Harris, (Zool. 3118). Lossiemouth, Mr. Weir.

The Fishing Frog, *Lophius piscatorius*. "Kethie, Sea Devil." Not uncommon in the Moray Firth, *Mr. Martin*. Burghhead, 1826.

The Ballan Wrasse, *Labrus Bergylta*. "Sea Swine." "This beautiful fish has been met with in several places along the coast, and gets the name of sea swine from the circumstance of its making a squeaking noise, like a pig," *Mr. Martin*. The Lossiemouth fishermen find it most frequently in the summer months, and in a piece of water between that port and the mouth of the Spey, associated with "Saites" (*Merlangus carbonarius*).

The Gilt-head, *Crenilabrus Melops*. "Sea Partridge." Stotfield, 1838. "Often met with in the Firth," *Mr. Martin*.

Gold Carp, *Cyprinus auratus*. Gold and Silver Fish. Frequently kept in glass globes in houses; and has of late years been reared in great numbers in a tank at the Elgin foundry.

Minnow, *Leuciscus Phoxinus*. Abundant in the Isla, near Keith, and in some other tributaries of the Deveron; yet this little fish is not known to have been detected in any other locality in the district comprehended in this list.

The Pike, *Esox Lucius*. "The Gedd." (Geddais). Not unfrequent in lochs throughout the Province of Moray, and in many of the deep dead pools of the Lossie, Spey, &c.

Gar Fish, *Belone vulgaris*. "Sword-fish, Green-bone." Not rare. Two specimens from Stotfield in 1840, measured $2\frac{1}{2}$ and $2\frac{1}{4}$ feet.

The Salmon, *Salmo Salar*. (Bradan,-Prattan). All the larger streams that fall into either side of the Moray Firth, have long been celebrated as favourite haunts of the salmon. The annual rent of the Spey some years ago was £8,000. But here, as in other parts of Britain, the numbers of this much prized fish have of late greatly diminished, chiefly, as many suppose, by the deadly stake and bag nets with which this coast is fringed. Still, this district keeps its high relative position with those who for profit or for pleasure give their attention to the exciting operations of salmon-fishing. Naturalists and lovers of the gentle art are with confidence referred to the works of Mr. St. John, Mr. Stoddart, and of Messrs. Anderson of Inverness ('Guide to the Highlands'), where they will find much information regarding the localities, habits, &c., of this and of the other species of the Salmonidæ, as observed in the northern counties of Scotland.

The Gray Trout, *Salmo Eriox*. "Bull Trout." Often taken in the Lossie, *Mr. Martin*. One of 4 lbs. 10 oz. is said to have been killed there in September, 1849, *Elgin Courant*.

The Salmon Trout or Sea Trout, *Salmo Trutta*. Abundant in most

of the rivers at the end of summer and autumn, and known as the "Finnock," "White Trout," &c. A few years ago, one of this species was caught on a hook with bait in the Lossie at Kellas, and after being dragged for a moment on a bit of rock in the middle of the stream, carried off part of the line. A few minutes only elapsed ere it was again brought ashore by a fresh bait and hook, which it had also greedily swallowed, while the first continued firmly fixed in its mouth. Similar instances have been before recorded, and prove either the extreme voracity of fish, or the low degree of sensibility in their nervous system.

Common Trout, *Salmo Fario*. (Breac-Precht). Most abundant in all the rivers and lochs of the district, which also contain several of the marked varieties of this well-known fish. It is in this district of Scotland, "in a small loch called Lochdow, near Pitmain," that the singularly deformed variety figured by Yarrell (ii. 108) was found.

The Great Lake Trout, *Salmo ferox*. "Loch Laggan," Yarrell : and in other lochs in the North of Scotland. At present no authority can be referred to or quoted showing that this species has been killed in Loch Ness, where it is most probably to be found ; for Mr. St. John, in his 'Wild Sports of the North,' says "I have little doubt that the immense depths of Lochness contain trout as large, if not larger, than are to be found in any other loch in Scotland.

Charr, *Salmo salvelinus*. Loch of Moy ; Loch Inch. Also in "lochs of Inverness-shire," Mr. St. John : and in several places in Sutherlandshire, Mr. Stoddart. In Wales this fish is called the red-belly, and is therefore probably the species meant by Shaw, in the 'History of Moray,' under the name of "Red-wame."

(To be continued).

On obtaining Coleoptera &c. from Moss during the Spring Months. — It needs but a single trial to prove how very prolific this system is. Indeed, any student, by referring to Stephens's Manual, will see at a glance, especially amongst the Brachelytra, the numbers there stated to be obtained from this source, as well as many others lying in a state of torpor, only awaiting the return of glorious summer to call them forth in all their vigour. The places which I have found yield the greatest number, are the stumps of fir-trees, about a foot above ground. I take with me a small bag with a running string at the top, and as I strip each stump, I put the moss into the bag. When this is full, I draw the string tight and tie up the mouth, so as to prevent the egress of any that begin to find their quarters too warm. After having carried home the bag, when about to examine it, I spread out on a table a large sheet of thick white paper, and taking the moss out of the bag little by little, shake it carefully, teasing out

all the small tufts, lest any insects be concealed. After this, the moss may be put on one side, as the particles which have fallen have amongst them the objects to which the attention must be directed. Presently one little head will peep out, and then another, as the insects begin to feel the warmer atmosphere. Some prefer putting the moss in a riddle and shaking it, but although mine may be the more tedious plan, yet it is the most certain, as it is not improbable that many insects may cling to the stems and be thrown away. The incredible number of other insects, besides those of which the seeker may be in quest, cannot fail to fill him with wonder and admiration—their curious forms, grotesque appearances, and varied colourings, contrasting strangely. Truly —

“ We feel within ourselves
His energy divine ; he tells the heart
He meant, he made us to behold and love
What he beholds and loves, the general orb
Of life and being. * * *

Thus the men
Whom Nature's works can charm, with God himself
Hold converse, grow familiar, day by day,
With his conceptions.” *

At the bottoms of walls also, especially those by river sides, many good things are to be found huddled together in every little tuft. From these two sources, viz., fir-stumps and wall-bottoms, I have taken the following, as well as a host of commoner ones : —

<i>Clivina collaris</i>	<i>Bryaxis hæmatus</i>	<i>Tachinus subterraneus</i>
<i>Bembidium flavipes</i>	<i>Arcopagus glabricollis</i>	<i>Philonthus 2-pustulatus</i>
<i>Ephistemus confinis</i> ?	<i>Falagria flavipes</i>	<i>Cafus xantholema</i>
<i>Agathidium atomarium</i>	<i>Calodera nigricollis</i> ?	<i>Raphirus semiobscurus</i>
<i>Clambus Enshamensis</i>	<i>Astilbus canaliculatus</i>	<i>Rugilus rufipes</i>
<i>Ptomophagus Davisii</i>	<i>Pella humeralis</i>	<i>orbiculatus</i>
<i>Rhinusa tricolor</i>	<i>Encephalus complicans</i>	<i>punctipennis</i>
<i>Nedys Chrysanthemi</i>	<i>Megacronus analis</i>	<i>Stenus 2-maculatus</i>
<i>Balaninus salicivorus</i>	<i>Mycetoporus pronus</i> ?	<i>Evæsthetus scaber</i>
<i>Dorytomus Tremulæ</i>	<i>Bolitobius atricapillus</i>	<i>Platysthetus morsitans</i>
<i>Hypera Polygoni</i>	<i>3-maculatus</i>	<i>Oxytelus pulcher</i>
<i>Plantaginis</i>	<i>Tachinus silphoides</i>	<i>Coprophilus striatulus</i>
<i>Limobius fulvipes</i>	<i>marginellus</i>	&c. &c.
<i>Helodes Phellandrii</i>	<i>cinctus</i>	

He who collects the *Lepidoptera* as well, and has a little spare time, might by adopting this plan both enrich his collection and spend a few hours very pleasantly. Many small larvæ and pupæ would fall to his lot, and these might assist in determining the transformations and periods of change of many species of *Micro-Lepidoptera* of which we are as yet without knowledge, as noted by Mr. Stainton in his ‘*Entomologist's Companion*,’ and so prevent their again “passing into oblivion.” In the hope that I may induce some of my entomological brethren to partake in the agreeable surprises with which I have met, I now take my leave by saying that although all Nature may apparently be sleeping, she but waits to unfold her treasures to the earnest seeker. — *John Scott ; London Works, Renfrew, March 15, 1852.*

* Akenside.

Method of using Laurel-leaves in killing Insects.—Having had a little experience in killing insects, particularly bees, which requires the greatest care as regards cleanliness and freedom from moisture, I venture to give my mode of using laurel-leaves. Bruise six or eight leaves, all together, with a hammer, but be careful that they do not fall to pieces, as they retain their moisture much longer than when pounded, as the manner of some is: then place them at the bottom of your wide-mouthed bottle. Cut a round of card and blotting-paper, the exact size of the inside of the bottle, the latter being folded several times; slightly tack together the card and blotting-paper, piercing them both through with small holes: this being done, press the card and paper tightly down upon the leaves. Thus prepared, the laurel-leaves will retain their power for several months, indeed through a whole season.—*W. H. L. Walcott; Clifton, April 2, 1852.*

Note on Aleucis pictaria.—I have just taken two specimens of this rare insect in fine condition (April 10). It is the opinion of some that this, like many others of our Geometrae, lives through the winter, when it makes its appearance early in spring, but my specimens were just out, indeed the wings of one were not dry.—*H. T. Harding; 1, York St., Church St., Shoreditch.*

Occurrence of Bembidium flavipes at Renfrew.—As I am not aware that this insect has before been taken on this side the Tweed, I thought it might interest some of the northern collectors to hear of its capture. Last spring, as well as this, it literally swarmed on a hedge-bank facing the south.—*John Scott; London Works, Renfrew, March 15, 1852.*

Note on Diglossa mersa.—As I understand that you do not reject the humblest contributions on interesting subjects in Natural History, if original, I take the liberty of sending a few remarks on one of our rarest native beetles, *Diglossa mersa*, which may interest some of the readers of your very interesting and useful journal. I had the good fortune to take several specimens of this singular little Staphyline, as yet found only on the Irish shores, on the 10th of this month, a period earlier than I am aware of ever its having been taken before. Now as the cheap railway trips in summer may tempt some English entomologist to visit the Emerald Isle, a hint or two on the precise locality of *Diglossa mersa* may not be unacceptable at present. It has been found as far North as Dundrum Bay, in the county Down; but the best and most accessible locality is at Baldoyle, where I found it, between the peninsula of Howth and Dublin. A very short journey on the Drogheda Railway will convey the collector thither, and when arrived, he has only to repair to the beach behind the Station-house, where, if the tide be out and the sun shining, he will soon reap a plentiful harvest. The *Diglossa* is sometimes to be seen running over the sand, but its peculiar habitat is below high-water mark, under stones half imbedded in the sand, not those loosely scattered about. One specimen only is found under a single stone; and as soon as uncovered, the little black creature is seen twisting about in the endeavour to hide itself; when if not immediately secured by a moist finger or a quill, it will defy all attempts to extricate it a second time. The uncommon retreat chosen by the *Diglossa*, rather than its minute size, is, I suppose, the cause of its not having been hitherto taken on the coasts of England and Scotland. *Cilleus lateralis* and other local if not rare Coleoptera are also found at Baldoyle. I may mention that Mr. Haliday, who originally discovered the genus, has seen the specimens taken by me on the 10th, so that there is no doubt of their identity.—*Arthur R. Hogan; Charlton, Dundrum, near Dublin, April 14, 1852.*

Proceedings of the Linnean Society.

April 6, 1852.—ROBERT BROWN, Esq., President, in the chair.

Read, a paper by Mr. Adam White, 'On the Influence of cold on the Flowering of Plants.' After a reference to Mr. Curtis's observations on the flowering of plants beneath the snow (made at the meeting of this Society on the 17th of February), the author quoted some remarks from Captain Beechey's Journal, with regard to the frequent occurrence of a luxuriant vegetation under the snow in the Arctic regions. He more particularly adduced the instance of *Saxifraga nivalis*, stated by Linnæus to flower in the regions of perpetual snow. The author also offered some remarks on the modifications which the specific characters of both plants and insects undergo, when exposed to the influence of a change of climate.

Dr. Hooker mentioned that when at Tierra del Fuego he had seen *Pernettya mucronata* flowering in a spot from which the snow had been accidentally removed.

Mr. Pratt stated that at Chamouni he had sought for plants in flower under the snow, but without success; and he looked upon the circumstance mentioned by Mr. Curtis as an accidental occurrence.

Read also a communication from Mr. J. Mottley, of Labuan, which was accompanied by specimens of Borneo camphor, and of the tree (*Dryobalanops Camphora*) by which it is produced. This camphor is consumed chiefly in China, where it is greatly valued for its medicinal qualities. The best specimens realize £5 per pound. The oil exuding from the tree is also used in medicine and as a varnish. With the Borneo camphor are invariably mixed the red seeds of a plant, which are added by the natives under the superstitious idea that the Spirit of the camphor would fly off, unless some such inducement were offered him to remain.

Proceedings of the Zoological Society.

March 23, 1852.—PROFESSOR OWEN, Vice-President, in the chair.

The following papers were read:—

1. 'Additional Evidence relating to the Dodo,' by W. J. Broderip, Esq., F.R.S., Vice-President of the Society.

2. 'On the Species of *Sericinus*, a Genus of Butterflies,' by Mr. G. R. Gray, F.L.S. In the 'Transactions of the Entomological Society,' Mr. Westwood introduced a Lepidopterous genus under the name of *Sericinus*, founded on bad specimens sent from Shanghai by Mr. Fortune, and thus supposed to comprise "both sexes" of the insects figured by Donovan in his 'Insects of China,' under the appellation of *Papilio Telamon*, "no specimen of which," as Mr. Westwood justly observed, "was then known to exist in any continental or British collections." Mr. Fortune has lately returned to this country with many specimens of the insect in a more perfect state, enabling Mr. Gray to take up the genus, and to define the characters of each species. Mr. Gray endeavoured to show that what had been regarded as two sexes are two distinct species.

3. 'Notes on the Dissection of a new Species of *Galago*,' by Mr. W. H. Flower. The details of this paper were purely anatomical.

4. 'On a new Species of Goose from China, collected by the late Lieut. Ince, at Shanghai,' by John Gould, Esq., F.R.S. This goose resembles the gray lag goose (*Anser ferus*) in the form of the bill, but the upper and under mandibles, together with their terminal points, are black, and there is a light-coloured space or bar between the nostrils and the end of the bill. In the general colour of the plumage, the bird has a strong resemblance to the bean goose (*Anser segetum*); it differs, however, from this last in size, and in its thick and powerful bill, which is further characterized by being unusually strongly serrated. Mr. Bartlett, who had made a special study of the geese, fully confirmed Mr. Gould's opinion of the specific value of the bird in question, and the author proposed to distinguish it by the name of *Anser serrirostris*.

Mr. Augustus Smith exhibited an interesting young specimen of the whiskered tern, killed in Scilly.—D. W. M.

Proceedings of the Entomological Society.

April 5, 1852.—J. O. Westwood, Esq., President, in the chair.

The following donations were announced, and thanks ordered to be given to the donors:—'The Zoologist' for April; by the Editor. 'The Athenæum' for February and March; by the Editor. 'The Literary Gazette' for March; by the Publishers. 'Entomologische Zeitung' for February and March, and 'Linnæa Entomologica,' Sechster Band; by the Entomological Society of Stettin. 'Revue et Magasin de Zoologie,' 1851, Nos. 11 and 12, 1852, Nos. 1 and 2; by M. Guérin Ménéville. 'Descrizione di alcune specie d'Insetti Fossili,' and 'Catalogo dei Crostacei Italiani e di molti altri del Mediterraneo:' both by the Rev. F. W. Hope, and presented by the Author. 'Nature's Teaching,' a Lecture read at the Annual Meeting of the Worcestershire Natural History Society, October 8, 1851; by the Rev. D. Melville: presented by the Author. 'Bulletin de la Société Impériale des Naturalistes de Moscou,' 1851, No. 2; by the Society. 'Proceedings of the Royal Society,' Vol. vi. No. 82—85; by the Society. 'Monographie des Guêpes Solitaires, ou de la Tribu des Euméniens,' par H. F. de Saussure. Cahir 1, Paris, 1852; by the Author. 'Entomographie de la Russie,' par G. Fischer de Waldheim. Tome v.: Lepidoptères—Nymphalides. Moscou, 1851; by the Author. A box of Brazilian insects; by Viscount Goderich, through Mr. Curtis. A box of British Micro-Lepidoptera; by Mr. Bedell.

The Rev. J. F. Dawson, Woodlands, near Bedford, was elected a Member; and W. Lancey, Esq., Westminster, was elected a Subscriber to the Society.

Mr. Adam White exhibited some insects, collected by Dr. Joseph Hooker in the Himalaya, directing attention to the Homopterous *Urophora Hardwickii*, of which the male was seen to possess the same kind of hairy tail-like appendage as the female, in which sex it had been considered to be the ovipositor. Mr. White remarked that the Lepidopterous genus *Trichura*, *Hübner*, founded on the *Sphinx coarctata*, *Drury* (*Zygæna caudata*, *Fabr.*), had a somewhat analogous structure, though much more scaled. He also pointed out *Derepteryx Hardwickii*, a Nepalese species of *Corsidæ*, apparently a male specimen.

Mr. White also exhibited some insects, chiefly Coleoptera, collected by Dr. Thompson, of the Hon. East India Company's Service, in Little Thibet, at an elevation of

8,000 feet above the level of the sea ; among which *Chrysomela fastuosa*, *Peryphus littoralis*, *Stenus ater*, and others, were identical with the British species.

Mr. White read the following extracts of a letter from J. C. Bowring, Esq., dated Hong Kong, January 29, 1852:—

“I possess in all about fifty Hong Kong *Brachelytra*, chiefly very small species, and the only peculiarly interesting form among them is an insect of which I have but one specimen, which I captured under a stone on the peak of Mount Parker ; the antennæ are pectinated so strongly as to be almost flabellate. I have not duplicates of more than half-a-dozen species, although I collect everything I can lay my hands on, and would take fifty specimens of each insect if I could get them, with the view of increasing my general collection by exchanging. It seems strange that there should be so few *Brachelytra* from China known in Europe. In Erichson (page 221), *Conurus pubescens* seems to be the only one mentioned, and that is a well known European species.

“I have found many new Carabideous insects this last season, and have now about eighty species, and fourteen *Cicindelæ* ; the greater part of these are so rare that I have no duplicates. Dr. Dubois, of the French frigate, ‘Algerie,’ lately found a fine *Scarites* on the sands of the mainland, opposite Hong Kong ; I have searched the spot well, but could not find another specimen. I discovered, however, a very pretty little *Notoxus*, while turning over the drift weed on the shore.

“I have never met with any more *Paussi* since my return in 1848 ; they must be of rare occurrence indeed, as I keep a sharp look-out for them.”

The President informed the meeting that M. Grové, of Marseilles, was about to make an entomological tour in Sicily, and wished to enter into communication with entomologists of this country, with a view to the exchange or other disposal of his Coleopterous captures.

Mr. W. W. Saunders mentioned that M. José Apolinario Nieto, Orizava, Mexico, a Mexican entomologist, wished to enter into correspondence with English entomologists.

Mr. Edwin Shepherd exhibited larvæ of *Botys Urticæ*, attached to the under side of a piece of wood which had formed part of a fence, where they had spun their cocoons and had hybernated, having not yet passed into the pupa state.

Mr. Douglas, on the part of Mr. H. Cooke, exhibited a book of drawings of Indian insects of all orders, belonging to Captain Wroughton, of the Indian Army. The beauty and fidelity of these drawings excited great admiration.

Mr. Douglas exhibited *Nepticula aurella*, taken at Darenth Wood on the 24th of March, a very early appearance, and *N. ignobilella*, bred from a leaf of hazel, gathered in the autumn.

Mr. Douglas also exhibited larvæ of *Gelechia contigua*, in the tops of young shoots of *Stellaria holostea*, larvæ of *G. fraternella* in shoots of *Stellaria uliginosa*, and a full-grown larva of a *Nepticula*, mining in a leaf of bramble just gathered ; many other bramble-leaves he observed had been similarly mined, but the miners had escaped. He mentioned that Mr. Stainton had recently found the terminal shoots of *Cerastium viscosum* rolled up like those of the *Stellariæ*, probably by the larvæ of *Gelechia*, or some closely allied moth.

The President exhibited specimens of *Blatta Germanica*, sent to him from Kildare, where they had been very troublesome in a house, attacking indiscriminately food and other things to which they could gain access, and living chiefly behind the skirting-boards of the kitchen. The female had her egg-pouch attached, remarkable for being nearly as large as the abdomen. This was the first recorded instance of the species being noxious in houses; in Lapland, *B. Lapponica* is very destructive to dried fish and other provisions.

The President also read a letter from Sunderland, inquiring the best mode of destroying *Blatta orientalis*, that common pest in houses everywhere; when several members mentioned as remedies basins baited with bread, and placed where the cock-roaches had easy access to them, from which, on account of their smoothness, the insects could not escape; phosphorus; turpentine sprinkled about the room at night, when they were active, the touch of the least portion proving fatal; a mixture of oatmeal and plaister of Paris; and keeping a hedge-hog, of which animal the *Blattæ* were a favourite food.

The President exhibited some specimens of the new cochineal insect called *Coccus Fabæ*, discovered by M. Guérin-Ménéville, and described in the 'Comptes Rendus.' The insect fed on the common bean, and rendered an exceedingly brilliant colour. The cultivation thereof on an extended scale had commenced in the South of France, and it was expected would prove a beneficial branch of industry to the peasants.

Mr. Smith communicated the following extract of a letter addressed to him by Dr. Felkin, of Richmond:—

"I had some port wine which I rather prized, packed in straw in wooden cases, in which it remained undisturbed for seventeen or eighteen years, but upon opening the cases I perceived some insect had been preying very considerably upon the corks, in a few cases to that degree that leakage and evaporation had completely emptied the bottles, in others there was only a little loss, but in most cases the corks were more or less destroyed. This partial destruction seemed as if it were prevented from being complete by the wine oozing out in a single drop, and being pernicious to the insect. I cannot form an opinion whether saw-dust may encourage the insect, but I may observe that the cellar is very dry. I believe wine-merchants in corking wine compress the cork with instruments, which leave a depression in the cork, in which the insect seems to burrow; in some wine bottled at home, in which the cork was only immersed in wine previous to driving it, the ravages of the insect appeared to be less, but I must add that these corks were of the best description. I have not yet employed any means to prevent the evil, but I think of cutting the cork level with the mouth of the bottle, and then dipping it for half an inch at the top into a mixture of yellow bees'-wax, 8 oz., and sweet oil, 4 oz., melted together; or to surround the upper part of the cork with a thin coat of gutta percha; or, after the bottle has been corked, to immerse the mouth in a solution of alum in vinegar. These are plans which, if effectual, would not injure the wine, or render it less fit for drinking."

Some members suggested that the mixture of resin with the bees'-wax would, by rendering the composition harder, prove effectual in excluding the insect, whatever species it might be, its eggs or larvæ.

Mr. Bedell intimated that he had in progress an experiment with some bottled wine, the corks of which were thus affected, to ascertain with certainty the kind of

insect causing the damage; at present it was supposed to be the larva of the Lepidopterous *Gracillaria*? *Vau-flava*.

Mr. Douglas called the attention of the members to the subject of insects found impaled on thorns, stating that Mr. Gould had informed him, with reference to the specimens presented by him to the Society last year, his opinion was that they were not placed upon the thorns by shrikes, as was generally supposed, because those birds had not at the time he found them arrived in this country, and the insects were uninjured, which was not likely to have been the case if those birds had so placed them; moreover, he afterwards found some bees transfixed on spines of furze in the north of Scotland, where shrikes never go. No doubt shrikes did impale insects, because it was one of their characteristics to hang up their food before eating it, whence they had derived the name of "butcher-birds;" and the same practice obtained also in the aberrant shrikes of Australia, but then they left only fragments of their prey. He believed that insects were blown by gusts of wind on to the thorns. Mr. Douglas further said that he had mentioned the subject to Mr. Doubleday, who told him that he once saw a *Leucania Comma* transfixed by a spine of dry furze, placed on the top of a garden-wall to keep away cats. The head of the moth was *towards the spine*, as if it had been arrested in the position of its flight at the moment. Mr. Douglas requested the members to bring before the Society any instances of impaled insects that might come under their notice, and that they would observe the position of the insect with regard to the thorn.

Mr. Bond was of opinion that shrikes placed bees on thorns, even in cases where they were found uninjured, for he had known those birds to hang up their prey, leave it, and afterwards return and eat it.

Mr. Douglas exhibited a bee, recently captured, with three female *Stylops* in the abdomen.

The President said that no greater number than three had hitherto been observed in a bee, but Dr. Burmeister, who had just returned from a sojourn of eighteen months in Brazil, had informed him that he had there seen seven *Stylops* in one wasp. The President added that Dr. Burmeister had brought with him a large store of insects and entomological information, and had directed particular attention to the transformations of the Lepidoptera.

Mr. W. W. Saunders communicated the following note from Mr. S. S. Saunders in Albania, dated "Prevera, March 2, 1852;" and exhibited the piece of bramble-stem referred to:—

"To return to the *Hylæus* (*H. Rubicola*). I should observe that my object in now sending the briar is to call attention to the middle cell of the three, which has not produced any larva, consequently the store remains therein as at the first, and consists of the liquid acidulous honey which forms their food in the larva state, and the cells are invariably (as in this instance) only half full thereof, the larva being preserved from contamination therewith until ready to feed; and you will further observe that the thin cases wherein such store is deposited, are prepared by the parent *Hylæus*, and are not to be ascribed to the progeny, the honey-bag containing the store being here preserved intact where no larva has been produced, and closed as at first. The gallery is exclusively that of a *Hylæus*, without any trace of other inmates, and I conceive that these facts will be deemed to offer conclusive testimony to the non-parasitic habits of *Hylæus Rubicola*."

Mr. Douglas read the following translation of so much of Zeller's 'Revision of the Pterophoridae' * as pertains to the early state of such species whose larvæ are known :—

AGDISTIS, H.

4. *A. adactyla*, H. Larva probably feeds on *Sedum acre* or *S. sexangulare*, the imago being found near Glogau in July, always among these plants, and sometimes also where *Gnaphalium arenarium* grows.

PTEROPHORUS, Geoffr.

5. *P. gonodactylus*, W. V.; *trigonodactylus*, Sta. Herr Fehr, according to Fischer von Röslerstamm, found that the larvæ from the beginning to the middle of March fed inside the flower-stalks of a large-leaved species of colt's-foot (*Tussilago*), near the base. In the flower-head of the same plant lives the larva of *Pædisca Brunnichiana*. (In England both these species are found in the perfect state on or about *Tussilago Farfara*.—J. W. D.)

6. *P. Zetterstedtii*, Z.; *Aluc. tesseradactyla*, Zett. The larva feeds on *Senecio nemorensis*: the perfect insect is found about this plant in July.

7. *P. nemoralis*, Z. Appears in July and August. The larva feeds in the stems of *Senecio nemorensis*.

10. *P. acanthodactylus*, Z.; *Aluc. acanthodactyla*, H.; *Aluc. calodactyla*, Haw.; *Pt. calodactylus*, St. The larva Zeller once found in July on a flowering *Pelargonium* in a garden, and having several times taken the imago in places where *Geranium Robertianum* grows abundantly, he supposes the proper food of the larva to be *Pelargoniums*. His friend Schlager, however, informs him that he found the larvæ with those of *Pt. phæodactylus* on *Ononis repens* or *spinosa*; but Zeller adds that he has the species from places where there is neither *Ononis* nor *Geranium*.

(In England we find the imago among *Ononis*.—J. W. D.)

12. *P. tristis*, Z., Dup. The larva feeds (probably) on *Hieracium Pilosella*. The imago appears at the beginning of June and end of August, among pines and birches, in sandy places near Glogau.

17. *P. Pilosellæ*, Z., Sta.; *didactylus*, St.; *Hieracii*, Sta. (Cat.) The larva feeds on *Hieracium Pilosella*.

18. *P. Hieracii*, Z., Sta. (Cat. Suppl.) The larva feeds on *Hieracium umbellatum*. The imago appears in July and August.

19. *P. Ericetorum*, Z. Appears in July and August. Zeller supposes the larva feeds on *Hieracium Pilosella*.

21. *P. obscurus*, Z. *Dup.*; *parvidactylus*, Haw., Sta.; *microdactylus*, St. Appears in June and July. The larva feeds on *Hieracium Pilosella*.

24. *P. phæodactylus*, H., Z., Sta.; *lunædactylus*, Haw., St. Appears in July. The larva feeds on several species of *Ononis*. Zeller remarks that it eats the flowers.

26. *P. mictodactylus*, W. V., Z. Appears the end of May and in June. The commonest *Pterophorus* near Glogau, where the larva feeds on *Saxifraga granulata*.

32. *P. graphodactylus*, Tr., Z. Freyer found the larva in June near Tegernsee (Alps) on *Gentiana lutea*.

33. *P. fuscus*, Retz., Z., Sta.; *fuscodactylus*, Haw., St. The larva feeds on *Veronica Chamædrys* (Stainton).

36. *P. lithodactylus*, Tr., Z., Sta. The larva feeds in June on *Inula salicifolia* and *I. dysenterica*.

38. *P. Scarodactylus* (H. P.), Z. The larva feeds on the flowers of *Hieracium umbellatum* and *H. boreale* in August and September.

41. *P. Inulæ*, Z. The larva lives in the flowers of *Inula Britannica*, feeds on the unripe seeds, and is full grown at the end of July. Its presence may generally be known by the disk of the flower having on it brown spots, or, at the part attacked being pushed up into a small elevation. But such flowers are often inhabited only by larvæ of flies, and many flowers containing a larva of this *Pterophorus* do not exhibit these marks.

43. *P. microdactylus*, H., Z., Sta. Appears in May and July. The larva feeds on the flowers of *Eupatorium Cannabinum*.

44. *P. osteodactylus*, Z., *Dup.*, Sta. The larva lives (probably) on *Senecio nemorenensis*.

46. *P. galactodactylus*, H., Haw., St., Sta. The larva lives on *Arctium Lappa* in May.

47. *P. Spilodactylus*, Curt., St., Sta. Appears in July. The larva feeds on *Marubium vulgare*.

51. *P. tetradactylus*, L., Haw., St. Appears in July and August. The larva feeds on *Thymus Serpyllum*.

52. *P. Malacodactylus*, Z. The long-haired larva feeds on *Nepeta Calamintha* and probably on other *Labiata*.

54. *P. pentadactylus*, L. &c. The larva feeds on *Convolvulus arvensis* and *C. sepium*.

59. *P. Siceliota*, Z. Appears (in Sicily and Dalmatia) in May, June and July. The larva feeds on *Ononis pinguis*.

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6. *A. polydactyla*, H., Z., Sta. Appears in May and June. The larva feeds on the flowers of *Lonicera Periclymenum*. The flowers attacked are rather more than usually thickened in front, and do not open. The larva bores on the under side of the flower-tube, eats up the inner part of the flower and fills the space with a quantity of dirt.

Part 8 of the current volume of the Society's 'Transactions,' was announced as just ready.—J. W. D.

Occurrence of the American Teal at Scarborough.—I received a few weeks since from Scarborough a specimen of the American teal, a male in good plumage, which was killed near that place last November. I mention it because it is a bird of only recent occurrence in this country, not being mentioned in Yarrell's birds. Can you inform me in what respect the female differs from our common teal, and whether it has been killed in this country.—*John Evans; Darley Abbey, near Derby, April, 1852.*

Notes on the Habits of Solen.—Having experienced great difficulty in procuring specimens of solens from the rapidity with which they go down into the sand, I was at a loss to conceive how the animal effected its descent; this, I now find to be accomplished by the extension and sudden contraction of its foot. When the foot is extended, it is long, tapering and pointed; when contracted, short, thick and club-shaped. It will be seen then, that when the animal thrusts down its foot into the soft sand to the extent of, say, two inches, and then contracts it into the club-shaped form, the shell will be drawn down two inches lower also, by reason of the force which the sand opposes to the foot when being so contracted. This process, rapidly repeated, soon enables the solen to escape beyond the reach of its enemy. I may mention that by the reverse of this process, with a slight modification, the animal forces itself to the surface, which it may be seen to do when the receding tide has left the sand-banks bare.—*Charles Barron; Royal Naval Hospital, Haslar, April 2, 1852.*

Note on the singular Habit of a Cat.—With reference to the “Singular Habit of a Cat” mentioned in your last number (Zool. 3452), the most reasonable conjecture I can offer is, that the cat in question has been led to adopt this plan from something like the following reason. A friend of mine has a cat, which, when left to herself, always jumps upon the breakfast-table, and commences dipping her paw in the cream-jug and conveying it to her mouth, just in the manner mentioned by Mr. Smith. In this case the cream-jug is too narrow to admit her head, so that she has been driven by necessity to invent some other plan. Is it not probable that the other cat has been led to adopt this habit in a somewhat similar way; and that when not very hungry she still keeps up the habit, varying it by lapping in the usual manner when rather more hungry?—*John Evans; Darley Abbey, Derby, May 4, 1852.*

Anecdote of Rats.—Though rats are generally called omnivorous, I doubt whether metal is often included in the “omnia.” I have now a piece of a leaden sash-weight, from which about 2½ lbs. have been eaten by rats as it hung in a window-frame. If you would wish to see the lead, I shall be most happy to send it for inspection. — *T. H. Burroughes; Harrow-on-the-Hill, February 5, 1852.*

A Pattern for Ornithologists. — However interesting to the naturalist may be the monthly perusal of the captures of rare birds, with which the pages of the ‘Zoologist’ abound (and undoubtedly such accounts are of great interest and value), yet to the true ornithologist it is very refreshing to turn from such accounts to instances of the protection and care bestowed by some upon the birds, which it is his pleasure as well as his province to defend. While paying a visit in another county, an instance of this care came under my notice, which breathed such pure genuine love towards birds, that I cannot help repeating it, trusting that it will afford my brother naturalists some of that pleasure which I confess the simple account gave me. It is this. The house at which I was staying is an old hall, surrounded by very old trees; these trees have been colonized by rooks from time immemorial, indeed it is one of the largest rookeries I have ever seen: the owner of this place having inherited it from his father, his grandfather, and a whole host of ancestors, is naturally proud of his old hall, his old trees, and, above all, of his rookery. The rooks are his especial favourites; he looks upon them as confiding friends, who flock around him every spring, and look to him for protection; they seem to know him for their guardian, and such indeed he proves to them: he loves to see them so bold and trustful that they will march about on his lawn close to his windows without any fear of harm; no sound pleases him so much as the hoarse murmuring caw of some wakeful rook, as the first streaks of daylight, long before the sun is seen, begin to appear in the east, or the loud calling of the huge rookery when the sun is up, and the early spring morning is brilliant with his beams; aye, although their hoarse throats cheat him of many an hour’s sleep, he can forgive his dear rooks any offence. Hardly anything causes him so much lamentation, as when the high March winds toss from their nests the half-fledged young, and they sprawl, a mournful spectacle, on the grass below. When the short-sighted farmers call the rooks thieves and plunderers, and abuse them for crimes and misdemeanours of which they are really guiltless, no one is so ready to take up the gauntlet, and do battle in their behalf, as the good old Squire. Well, one day a hapless rook, by some awkward blunder contrived to get his leg hooked in the fork of a bough; the more he fluttered and

struggled to release himself, the tighter did his leg become fixed in the unlucky fork; and so the poor bird fluttered and struggled to no purpose, until at length his strength was exhausted, and then he hung with his head downwards, and suspended by one leg, only occasionally making a fresh vigorous effort to disentangle himself, which ever proved ineffectual: and so he would have continued to struggle till he died, had not his kind-hearted protector chanced to pass by the tree, and looking as usual with a complacent smile on his sable friends above, chanced to spy out the unfortunate bird which dangled in so luckless a manner from the bough. To see one of his favourite rooks in such a predicament, and to resolve on his rescue, was but one thought; ladders and ropes and men were soon summoned, and although the tree was a high one, and the bird had chosen a most unapproachable gibbet, yet the good work was not given up, until the rescue had been effected and the poor rook released. Can we not conclude that the kind-hearted Squire returned to his home with feelings more joyful at the good work he had done, than if he had succeeded in bagging some *rara avis* to add to his collection in the hall, for he is a naturalist of no small knowledge, and the little incident I have related above marks him in my mind as a thorough ornithologist; would that we could point to many such, who make birds not only their study and delight, but also the objects of their care and protection.—*Alfred Charles Smith; Old Park, Devizes, May 3, 1852.*

Occurrence of Rare Birds near Kingsbridge. — I append a list of a few very rare birds which have lately occurred for the most part in this neighbourhood.

A pair of merlins, male and female, shot at Kingsbridge in January, are now in Mr. Elliot's museum.

A ringed guillemot, shot upon Slapton Sands, is now at Mr. Nicholls's for mounting. I saw it alive.

A fine male little bittern, captured yesterday at Prawl, apparently asleep, was brought to Mr. Nicholls unhurt. He placed it in an empty room, where it appeared quite at home, and amused us much by its grotesque attitudes. It seldom stretched out its neck, excepting in the act of striking, which it did with much force, drawing blood from the hand of a boy who ventured too near it. I can safely say I never saw a stuffed specimen in a correct attitude. I have one in my collection, shot at Slapton, a few miles from Prawl, a younger bird, and have secured this one. The following are also among my birds: —

Wood-chat shrike, adult, killed in Somersetshire, and a young one at Kingsbridge.

White-winged crossbill, Taunton, Somerset.

Pine grosbeak, a fine male, Taunton.

Glossy Ibis, a brilliant bird, Taunton.

—*Charles Prideaux; Kingsbridge, April 24, 1852.*

Occurrence of Rare Birds near Norwich. — The following notice of the occurrence of rare birds in this locality may not be unworthy of a place in your journal: —

On Monday, the 26th instant, a fine pair of the Arctic tern (*Sterna arctica*) was shot near this city, on the Heigham river.

On the 17th instant a specimen of the black tern (*Sterna fuscipes*), an equally rare species, was shot near the railway terminus at Thorpe next Norwich.

Two specimens of the hoopoe (*Upupa Epops*), in good plumage, have also been shot; one at Kirtly, near Lowestoff, Suffolk, the other on Belauagh Heath, Norfolk.

—*T. O. Harper; Norwich, May 6, 1852.*

Occurrence of the Osprey near Derby. — On Thursday, April the 26th, a fine female

osprey was shot at Cavendish Bridge, near Derby.—*John Evans; Darley Abbey, Derby, May 13, 1852.*

Occurrence of Montagu's Harrier at Scilly.—I have just had an opportunity of examining an interesting specimen of an adult female of this species, captured within the last day or two on one of the Isles of Scilly. On dissection I found the ovarium filled with eggs, but not much developed. The under parts from the throat to the vent are longitudinally marked with dark oblong spots on a yellowish white ground: upper plumage generally uniform brown, the feathers having no pale edges, but a decided tone of blue pervades a great many of the scapulary feathers, some of the feathers having this colour more decided than others: the top of the head rufous, with darker markings: above and below the eye is a broad white blotch: ear-coverts deep brown: irides *bright yellow*; lesser coverts of the wings spotted with rufous on a brown ground, giving this portion of the wing a decided character: outer tail-feathers barred alternately with two shades of rufous brown. It would appear that the female of this harrier has a decided tendency to assume the adult blue plumage of the male as it becomes adolescent; and it is not improbable that this character may also be observed in the female of the common harrier, and we know that in the marsh harrier old individuals become quite pale in colour. In a fine female specimen of Montagu's harrier which I have in my possession, the characters different from those in the specimen now under notice, are the following:—1. The whole of the upper plumage is deep brown, having the feathers margined with yellowish white. 2. The whole of the under parts are of a uniform bay, *without spot or streak*. 3. The irides are *dark hazel* approaching to brown.—*Edward Hearle Rodd; Penzance, April 19, 1852.*

Second Occurrence of Montagu's Harrier at Scilly.—I yesterday obtained another specimen of this harrier, which, like the first, proved, on dissection, to be a female. The upper part of the plumage is very similar to that of the first specimen, except that it is without the blue or *ash-coloured* tint, which is observable in the other bird, a character which I believe more or less belongs to very old females of this and the common harrier, the tint becoming more and more intense after each succeeding moult. Both these female birds may be said to be in adult plumage, for the scapulary and dorsal feathers are uniform in colour, without any ferruginous edges: in addition to this, the breast and belly of each specimen is distinctly blotched with longitudinal deep red marks upon a *yellowish white* ground; these parts, in the immature bird of both sexes, being of a uniform pale yellowish fawn colour, with no streak or blotch, except a small capillary line passing down the shaft of each feather.—*Id.; April 28, 1852.*

Note on the Destruction of Eggs by Montagu's Harrier.—I have ascertained a character in this bird which may deserve noting, namely, that of destroying and swallowing the eggs of birds. In the first specimen Mr. Vingoe, on skinning the bird, observed the sides of the mouth to be covered with what appeared to him and me the yolk of an egg. In the second specimen the greater part of an egg (including the shell) of the common thrush was in her throat, and it seems that she was shot just in the act of swallowing it.—*Id.*

Occurrence of the Great Ash-coloured Shrike in Norfolk.—A specimen of this bird was killed at Weybourne, on the coast of Norfolk, last week; and one was shot about two years ago near the same place.—*T. F. Buxton, jun.*

The Song Thrush (Turdus musicus) nesting on the ground.—This spring a song thrush, in a plantation at Sprowston, near Norwich, instead of making her nest in the ordinary manner, laid and hatched her eggs on the bare ground, without any nest, but

simply in a little hollow scratched out at the foot, and under the shelter of, a small bush.—*J. H. Gurney ; Easton, Norfolk, May 15, 1852.*

Occurrence of the Black Redstart near Oxford.—I this day bought a very fine male specimen of the black redstart (*Phenicura Tithys*), which was killed last Sunday somewhere near Oxford.—*T. L. Powys ; Christ Church, Oxford, March 24, 1852.*

Occurrence of the Black Redstart in Sussex.—Whilst on a visit at Ralton, near Eastbourne, last week, a beautiful specimen of the black redstart was brought to me, which had been shot near the house. It is now in my collection.—*George S. Frederick ; 11, Charles Street, Westbourne Terrace, April 27, 1852.*

Occurrence of the Thrush Nightingale (Sylvia turdoides) near Dartford, in Kent.—A fine male specimen of this extremely rare British bird was shot near Dartford, on Saturday, the 8th instant, by a man who took it for a nightingale. I had an opportunity of examining the bird in a fresh state, through the kindness of Mr. Green, the Naturalist, 1, East Road, City Road, who has the skin for disposal.—*Edward Newman.*

Occurrence of the Ortolan (Emberiza hortulana) on the Sussex Coast.—I beg to inform you that a fine male specimen of the ortolan bunting was shot on the morning of the 27th instant, within a few yards of the turnpike gate between Lancing and Worthing, and is now in my possession. When first observed it was seeking food on a bank by the road-side, and would have escaped notice had it not been for its strange note when disturbed. On examining the body after it was skinned, I found that it was by no means fat, but nevertheless plump, and contained almost exclusively the remains of small beetles, principally Curculios. This is, I believe, the first instance of its occurrence in this county recorded in the pages of the 'Zoologist;' in the last case mentioned by Yarrell the bird was shot at the end of April, 1841, whilst sitting on the railway viaduct at Brighton, being exactly at the same time of the year, and almost in the same locality, as in the present instance.—*J. W. Stephenson ; 2, Loudoun Place, North Brixton, April 29, 1852.*

Occurrence of the Hoopoe in Sussex.—I beg to send you the following account of several hoopoes which have been obtained within the last fortnight, near Eastbourne, Sussex. The unusual circumstance of so many of this species being met with in the spring, arises most likely from the prevalence of the easterly wind. On the 19th of April a female was shot at Ralton, near Eastbourne, by Freeman Thomas, Esq., which was brought to me in the flesh, and is now in my collection. On the following day I saw another female bird, which was shot near Hailsham, in Sussex. And this morning I received a letter from Mr. Thomas, of which the following is an extract:—"Since you left a flight of hoopoes seems to have arrived. I send you two more specimens, shot by Vine, while quietly feeding in his grass-field, and another was seen. The whip, when out with the hounds on Saturday, April 24, saw two more on the Downs."—*Geo. S. Frederick ; 11, Charles Street, Westbourne Terrace, April 27, 1852.*

Occurrence of the Black Grouse (Tetrao Tetrix) near Lynn.—A fine female was shot at Clenchwarton, near this town, about the last week in April.—*E. L. King ; Lynn, Norfolk, May, 1852.*

Occurrence of the Ring Dotterel (Charadrius Hiaticula) near Oxford.—Two ring dotterels were observed on the banks of the Isis, in Port Meadow, near Oxford, a few days since. I only mention this because I do not recollect having heard of this bird so far inland before.—*T. L. Powys ; Christ Church, Oxford, March 24, 1852.*

Occurrence of the White Stork near Yarmouth.—A white stork, an adult male, was killed on Breydon, near Yarmouth, about the 15th of March. Another was said to

have been killed near Yarmouth about the beginning of January. — *L. H. Irby ; Saham, Norfolk, April 24, 1852.*

Occurrence of the Glossy Ibis in Ireland.—A specimen of the glossy ibis (*Ibis falcinellus*) was killed on Lough Dun, in County Longford, about the 20th of November last. — *T. L. Powys ; Christ Church, Oxford, March 24, 1852.*

Occurrence of the Little Crake (Crex pusilla) in Norfolk. — An adult male of the little crake, in very fine plumage, was shot at Sutton, near Stalham, on the 16th of April. The date of its capture corresponds very nearly with the time of the general arrival of the spotted crake. — *L. H. Irby ; Saham, Norfolk, April 24, 1852.*

Occurrence of the Eared Grebe at Yarmouth. — A beautiful pair of the eared grebe were killed last Tuesday at Yarmouth, and are now in the possession of Mr. Green, the naturalist. The female had several eggs about the size of small marbles. — *Edward Newman ; May 14, 1852.*

On the Specific Distinctness of the Ringed Guillemot.—In an interesting note (Zool. 3425), Mr. A. Newton remarks that it can only be ascertained by repeated observations whether or not the ringed guillemot is to be regarded as a distinct species from the common one ; but he expresses his opinion that it is a point which may be easily ascertained, and he feels that it is highly desirable the question should be settled. Whilst I cordially acknowledge the justness of these views, I confess I do not see any probability of a speedy settlement of the matter. Assertions which find their way into books of authority are very long before they entirely lose credit. They are handed down from one writer to another ; they are received as articles of early faith to which one is apt fondly to cling in after years : those who might make original observations not caring to run the risk of unsettling their former belief, whilst those who have no personal opportunities of inquiry prefer the established authority of their first favourite to that of any one who has been rash enough to call it in question in any point. Numberless feelings are operating in the same direction. In questions of species, this man has specimens which are valuable as long as the species is supposed to be distinct ; that man has some other equally powerful bias, of which he may not be at all conscious. Few persons are actuated by a pure love of truth. But these are not the only difficulties. There are differences of opinion as to what really constitutes a species, and not many people have clear ideas on this head, none, I believe, can have any permanently settled notions. At all events, those who hold the opinions which have been recently advocated by several of the most advanced men in palæontological research must be in some perplexity. If certain living beings have made their first appearance not in one spot, but in several parts of the world independently, in one case precisely similar to each other, in another so nearly similar that they will still breed together continuously, in a third so that they can only breed together for one or two generations : if, on the other hand, as we know, ages of peculiar influences may have subsequently made apparently distinct races, that is, what we call permanent varieties, of various branches from one common stock ;—it will be admitted that we must be in considerable difficulty in adapting the word species to our new ideas, and supposing this to be done, great obscurity must still remain respecting individual cases. Without, however, discussing the question, — *What is a species ?* it appears to be pretty generally agreed that if no obvious structural difference can be shown to exist, beyond what may be supposed due to age, sex, or season, there is no presumption of a distinction of species, unless at all events there can be found some marked variations in the actions of life, and especially a constant restriction in interbreeding. It follows, if the rule is

stated correctly, that Mr. Newton must not throw the *onus probandi* on those who do not believe the ringed guillemot to be a distinct species, at least, if this assertion be not denied, namely, that there has not been proved any appreciable structural difference between it and the common guillemot. For a constant restriction in interbreeding has not been shown, and the only variation in the actions of life hinted at has been the occupation of particular shelves of the rock. But this peculiarity might be owing to age, for it is probable that of all gregarious species, as certainly of rooks, the old birds take the best places for themselves, leaving the outskirts to the younger members of the community. Even then admitting the fact of the segregation, I think no case is made out for those who would subdivide the species of the common guillemot. But I do not admit the supposed fact as a general truth. Even if the information given to Mr. Procter in Iceland be correct (and Mr. Newton's observation in the Farn Islands tended to confirm it), it is certain that in this country, and in the Faroe Islands, the birds lay their eggs promiscuously. In the year 1849 I paid particular attention to this subject. First, I saw a large assemblage of guillemots on April 22 (a sunshiny day), upon the flat summit of the rock called the Kleat, at Holborn Head, in Caithness. There were several hundreds of them standing together on the guano-covered platform of that lofty stack. They were not more than forty or fifty yards from me, and with a glass I could see them as well as if they had been in my hand. Perhaps every sixth bird amongst them had the white margin to the eyes, and the white line extending from it. They were courtseying and bowing to each other, without any reference, so far as I could see, to the presence or absence of the facial peculiarity, and as I carefully watched this match-making party for some time, had they shown any marked preferences, I could hardly have failed to observe it. At the beginning of June, in the same year, I became familiar with the guillemots on the cliffs of the island of Handa, off the coast of Sutherland, on which they are in myriads. I was not satisfied with looking at them from above, but with the help of a rope I went amongst them in every part of the rocks on three or four days. The ringed ones seemed rather less numerous than in Caithness; they were scattered amongst the others, neither often mixing with the razor-bills on the upper shelves, nor confining themselves to the lower shelves of the rocks, but in every row of ten or twenty guillemots, one or two were sure to have the white about the eyes. I took with great care the eggs from underneath several of the white-eyed ones. They differ in no respect from the other eggs, and are liable to the same varieties. In one instance of a row of ten or twelve eggs, the only white one (there was scarcely a spot upon it) was laid by a white-eyed bird, which so far gives colour to the story of the Flamborough climbers, that the ringed guillemots lay white eggs. However, I am by no means sure (alas for egg-collectors!) that birds are always found sitting on their own eggs. Does not a guillemot when wishing to sit take to the first egg which it finds uncovered on the shelf or part of the shelf to which it has attached itself? At all events, moved about as the eggs often are, and ignorant of exchanges made for them as most birds seem to be, it appears probable that such may be the case; and certainly it is so with another gregarious sea-bird laying a single egg—the gannet. At the Bass I have seen one go and sit upon the nearest unoccupied egg, when pecked off another egg which it had previously been sitting on, by a comrade just arriving from the sea. Yet this bird makes a nest; indeed that which came up last, in the anecdote I have just related, showed a knowledge of some claim of right or might to which the other submitted. In the Shetland Isles, on the sides of the Holm of Noss, I saw the white-eyed birds sitting on their eggs side by side

with the others, in about the same proportion as in Handa. In the Faroe Islands the ringed guillemots struck me as being perhaps in greater plenty than in the North of Scotland, especially on the little rocks at the level of the sea; of course not breeding in those low situations; but the common guillemots were always in far greater numbers than the ringed, and always mixed with them. Down the stupendous cliffs of these islands, I did not attend so much to the guillemots when such rare and interesting birds as the fulmars fully occupied me, but I examined the heaps of broken-necked birds brought up by the climbers for provision; here, if I remember right, the proportion was about as one to ten. Of two ringed birds which I dissected in Fugloe, one was a male the other a female. I constantly made inquiries of the people, who are very intelligent, and very intimately acquainted with their birds. They none of them had ever dreamed of the white-eyed birds being of a different kind from the others, but some of them thought they were the males, others that they were the females, — both opinions, as I ascertained, only partially true. In other instances also they never confounded together two kinds of birds. They even recognized the two species of Fjaldmurra—the dunlin and the purple sandpiper. I feel convinced, that if the ornithologists who have described the two species of guillemot had had opportunities of seeing them on their native rocks, the idea of their being distinct could hardly have occurred to them. The differences due to age in the razor-bill formerly gave a far more plausible ground for a subdivision of species in its case. Were we to follow the analogy of that species, we might suppose the white-marked birds to be old ones, but I rather incline to the idea that if the distinction is one of age, they are young birds, especially as it is the character of young guillemots of the year to have the most white about them. But had it not been for a private invitation from a gentleman much interested in the subject, I should not have ventured to intrude my opinions upon the readers of the 'Zoologist.' In a question certainly not easy of *proof*, opinion will always go with acknowledged authorities, and I cannot expect my convictions to be of any use in settling the question. Almost the only proof of which the matter is capable, is perhaps the keeping specimens in confinement, when if the ringed changed to common birds, or *vice versa*, I suppose every one would be satisfied, on the fact being properly attested; but if they did not change, unfortunately nothing would be proved. The only alternative would be the marking of wild birds, but without unusual opportunities this method could not be followed out. Mr. Newton's paper is headed "British Species of Guillemot," but as no mention is made of Brunnich's, that gentleman or Mr. Newman very probably does not consider it worth mentioning, and in truth, as a British bird, it scarcely is. It certainly does not breed anywhere round our islands, and I could see or hear nothing of it in the Faroe Islands, although it has been mentioned amongst these birds. Mr. Hancock tells me there is no other species in Baffin's Bay; but whether it is to be considered distinct, or a local race, I am not sufficiently familiar with the bird to have formed any opinion. In conclusion I may mention that the substance of the above remarks on *Uria lachrymans* was introduced into a paper by myself on the "Birds of the Faroe Islands," read at the meeting of the British Association at Edinburgh, and printed at length by Sir W. Jardine, in his 'Ornithological Notes.'—*John Wolley; May, 1852.*

A List of the Fishes that have been found in the Moray Firth, and in the Fresh Waters of the Province of Moray. By the Rev. GEORGE GORDON.

(Continued from page 3462).

THE Herring, *Clupea Harengus*. (Sgadan, -Scattan). There are three of the salt-water species in this list, which, far above any others, engage the time and attention of the native fishermen, — the herring, the haddock, and the cod. And perhaps the first of these three again stands, to the other two, in the same relatively high position in their estimation, as the three taken together stand towards the whole finny tribe. The time of the herring-fishery is their harvest season. During the other seasons of the year they prepare for it by day — they dream of it by night. Much of the winter is passed by their families in weaving and in mending nets; the spring in overhauling and repairing their boats; while the engagements they may form with the curers, the prices they may obtain, the quantities they may net, and the curing-stations they may fish at, perchance far from home, rouse a thousand hopes and fears in the breasts of the herring-fishers of the Moray Firth.* The vast importance of the herring fishery to this as well as to other classes of the community, must be allowed when, for example, last year (1851), which as to quantity was an average season, but as to price far below what most of those engaged had at one time experienced, “the catch,” at all the stations in the line of coast from Wick to Peterhead, employed 2,334 boats, each having at least four men and a boy on board. There were 273,066 crans of fish caught, calculated to be upwards of 275,000,000 of herrings. The whole, when cured and put into barrels, were expected to yield a return of £200,000. Formerly the West Indies formed the great market; but now the chief if not the entire export is to Stettin, and one or two other continental ports.†

Although not regularly fished for except during six weeks after the middle of July, yet the herring often appear in the Moray Firth in May, when they are lank and thin. They gradually move westward, and in some seasons congregate in innumerable multitudes on the far-famed fishing-bank of “Guillam,” opposite the Bay of Cromarty. On this bank, about half a square mile, fishings for a whole week have been made at the average catch daily of nearly a thousand barrels.‡

* See ‘Letters on the Herring Fishery of the Moray Firth,’ by Hugh Miller.

† Banffshire Journal.

‡ Thompson’s ‘British Fisheries.’

They are generally driven away from this favourite spot by any storm that may arise, and do not again, for that season, collect around it. After the middle of August the herring swim lower in the water, and generally disappear in September. They are observed to approach the shores in shoals of miles in extent, but never to leave the Firth in this orderly manner.

Leach's Herring, *Clupea Leachii*. There can be little doubt that the herring which is to be met with almost every winter in the Moray Firth, in small numbers, is the one noticed by Yarrell under this name. In the first week of February this year (1852), a small shoal of them appeared near Burghead, from which a few crans were taken. They agreed with Yarrell's description in the proportional length of the head, but the body was not so deep as there stated. In two of three specimens examined, the roe was the size of that of the common herring in July; the same may be said of the milt that was in the third. The stomach of one was crammed with a *Mysis*, together with a few individuals of another Crustacean, but of the Edriophthalmous division.

An experienced fisherman of Hopeman states that the appearance of herrings in the Moray Firth in the winter months has been known for ages; that they are considered to be much stronger, somewhat of greater size, and with larger scales than the summer herrings; that they do not, like the latter, swim near, and sport above the surface of the water; and that they never appear in shoals or in numbers at all to be compared with the extent and quantity in which the common species is found, but are to be met with dispersed throughout the Firth, often in shallow water, trying to avoid the cod and other fishes that prey upon them. In an economical point of view this species of herring deserves more attention than it perhaps has hitherto met with in this or in any other part of Britain where it occurs.

The Sprat, *Clupea Sprattus*. "Garvies." Abundant in the eastern part of the Firth, towards the end of the herring-fishery season, and after this they are found advancing westerly, towards the more sheltered parts, some years in great numbers,—often about Campbellton and Fort George. They are caught in small-meshed nets; and are used both for food, and for bait on the fishermen's lines. Their position is discovered by flocks of gulls hovering over it. At one time there was an attempt made to prohibit the fishing for "Garvies" in the Firth, under the idea that they were the young of the common herring; but the fishermen resisted successfully, urging, among less scientific arguments, what is now universally allowed, that they were a distinct species.

The Twaite Shad, *Alosa finta*. This species, or the Alice Shad (*A. communis*), is known to the fishermen, who call it the "Rock-her-ring."

The Cod, *Morrhua vulgaris*. (Poullach). Found at all seasons, but most plentifully in the month of March. The half-grown cod are called "Duncans" by the fishermen. The great voracity of this well-known species has often been noticed. The stomach gradually contracts when the fish is fasting; but distends again to a great bulk as the heterogeneous matter is being swallowed. Yet in a great many instances the stomachs of cod caught on the lines of the fishermen are distended and empty, a condition probably to be accounted for by the power which they seem to possess of disgorging their food when they find themselves fixed on the hook, a circumstance which the fishermen have often observed when drawing them on board their boats. The mussel is the most common bait used in the Moray Firth. But at some fishing-stations, as at Lossiemouth, this is occasionally very scarce, when other mollusks, as the limpet (*Patella*) are resorted to. In the spring of this year (1852), a severe gale from the north caused the sea to break in upon a colony of "Badgers," the local name for a common shell-fish (*Lutraria vulgaris*), and of "Spout-fish" (*Solen Siliqua*), and washed ashore many a basket-full of these shell-fish, which for several days supplied the fishermen of Lossiemouth and Stotfield with what they reckoned the most tempting and successful of baits.

Here, as elsewhere, the cod is known to prey upon the smaller haddocks, whittings, and flounders, particularly when these are caught on the lines; but to these three species a long list of other fish and smaller fry might be added, including the glutinous hag (*Myxine*), which is also said to delight in finding its way voluntarily into the cod's stomach when it is wriggling on the fatal hook. As well as the mollusks already mentioned, the cod greedily devours the inhabitants of *Fusus antiquus*, *Buccinum undatum*, and of the other larger univalves, when they have stretched out their necks too far to be retracted in safety, before they are snatched up and torn from their shelly and otherwise secure domiciles. A small Cephalopod, in the form of a *Loligo vulgaris*, or of an *Octopus vulgaris*, or a *Tritonia Hombergii*, is occasionally found among their dainties. The Crustaceans, however, seem to yield a larger portion of food to the cod-fish than the mollusks supply, at least in the Moray Firth. If the weight or quantity of this food be considered, perhaps the following is the order in which the Crustaceans ought to be ranked, viz.: — Cancer Pagurus, Inachus

Dorsetensis, *Pagurus Bernhardus*, *Nephros Norvegicus*, *Hyas araneus*, *Hyas coarctatus*, *Stenorhynchus Phalangium*, *Portunus depurator*, *Galathea nexa*, *Pandalus annulicornis*, *Gebia deltura*, *Nika edulis*, and nearly as many more species of less frequent occurrence. It is rather singular that neither *Carcinus Mænas*, the most abundant Crustacean on the coast, nor the lobster (*Homarus vulgaris*), is to be found in the above list. Their absence from this bill of fare may be accounted for by the habitat of the former being too far inland, and in too shallow water, to allow the cod to reach them, and by the power with which the latter can wield its defensive arms against an enemy to which most if not all of its congeners must succumb. It does not appear that large subsidies are levied from among the Echinodermata; yet when a colony of *Ophiocoma rosula*, or a goodly sized *Ophiura texturata* is discovered, they are not spared. The Asteriadæ seem very unpalatable to them; not so a *Cucumaria pentactes*, or a *Priapulius caudatus*. It would, however, require a lengthened list and an abler hand to enumerate all the species which the cod of the Moray Firth gathers as its food from the other lower orders of marine animals. Suffice it here then to state that very frequently a "Sea-mouse" (*Aphrodite*), and occasionally an *Actinia*, or "Sea-paap," seems to be "tucked in" without exciting any squeamishness in the eater. To the published facts regarding the various substances foreign to their wide domain which have found their way through the gullet of the omnivorous cod, it may be added that grain (barley and wheat), pieces of potato and of paper, probably thrown overboard, feathers of middle-sized birds, in one case an entire partridge, and a mass of hair, have been seen in the corners of these "crops for all corns."

The Haddock, *Morrhua Æglifinus*. (Adag.-Attac). Perhaps in no other part of the British seas is this well-known and valued denizen of the deep so steadily and successfully sought after, as in the waters of the Moray Firth. From the fishing villages so thickly set down on its shores, and throughout the whole year, save the six or eight weeks of the herring-fishery, the haddock is carried many a weary mile in heavy burdens by the fisherwomen to the inland towns and rural districts, where it is exposed for sale in its fresh as well as in its half-dried or smoked state, in which latter condition the Stotfield fish at least have long been rivals to the far-famed "Finnon haddie" of Aberdeen. The haddocks caught at the larger stations of the Firth, are likewise salted in large quantities during the winter and spring months for exportation to more southern markets. The fishermen state that the "Garvie" (*Clupea Sprattus*) is the favourite bait for the

haddock, which they will take by day as well as by night; while, with the mussel for a bait, the best time for setting their lines is an hour or so before sunrise. The comparatively recent plan now adopted of curing the haddock as well as the cod-fish, and the facility of transport offered by steam navigation, have more than doubled its price, which is not likely to be lowered by an increased supply. The reverse is rather to be looked for, as there has prevailed for upwards of the last twelve months, a great scarcity of the haddock and the other "white fish" all along the shores of the Moray Firth,—a scarcity such as has not been there experienced for the last fifty years, and for which no satisfactory reason has as yet been assigned.

The haddock preys upon the smaller species and individuals above mentioned as the food of the cod. It seems to eat more freely of the Spatangaceæ and of the Ophiuridæ; and among the latter order the long-armed brittle star (*Ophiocoma brachiata*) is a particular favourite. Many a rare and minute Crustacean may be obtained by a close inspection of the stomach of a haddock from the Moray Firth,—such as *Ebalia Cranchii*, *Callianassa subterranea*, *Crangon spinosus*, *C. sculptus*, *Hippolyte spinus*, *H. varians*, *Calocaris Macandreae*, *Aluana rostrata*, and *Cuma trispinosa*; the last three species being recent additions to the British Fauna, by the researches of R. M'Andrew, Esq., and H. Goodsir, Esq.

The Bib or Pout, *Morrhua Lusca*. "Siller-fish," and "Jackie Downies." Stotfield, 1837. Gamrie, (Zool. 3118). In a specimen 14 inches long, just examined (March, 1852) in reference to Yarrell's description, the only points in which it did not agree were two:—First, the anal opening was considerably behind the line of the origin of the pectoral fin, and not "under the origin" of this fin: and, secondly, the first anal fin commenced in a line with the middle, and not with "the beginning," of the first dorsal.

The Whiting, *Merlangus vulgaris*. (Cuideag,-Cuitschach). Most abundant in the fishing-grounds in May and June, but in best condition in November and December.

The Coal-fish, *Merlangus carbonarius*. "Cuddies, Saithes, Coalman, &c." (Suidhean,-Suyeen). Very common in the Firth, most abundant in May, when the herrings appear. This species, more than any other salt-water fish, affords amusement to the amateur fishers, old and young, who keep their feet still on *terra firma*, or who adventure but a short distance from the shore. Mr. Riach, of Duffus, who has for many years thus occupied his summer spare hours, states that he observes three distinct stages of growth among the coal-fish, which he

supposes they attain at the respective ages of one, two, and three years; and that after they reach the last size, they either stop in their growth, or move farther from the shore, into deeper and more distant localities than those to which he can push his tiny bark.

The Pollack, *Merlangus Pollachius*. "Lythe." The Lossiemouth fishermen get them often in the summer and autumn months, and frequently among Saithes (coal-fish) and on rocky ground. How comes it that the English name of this fish so much resembles the Celtic name of the cod?

The Hake, *Merlucius vulgaris*. "Herring Hake." Found frequently, according to the Lossiemouth fishermen, following the herring in the months of July and August; and sometimes caught on the haddock-lines by swallowing a fish already hooked. "Often caught in the salmon-net at Lossiemouth," *Mr. Martin*.

The Ling, *Lota Molva*. (Lahan). Common in the Moray Firth.

The Three-bearded Rockling, *Motella vulgaris*. At Gamrie, (Zool. 2997).

The Five-bearded Rockling, *Motella quinquecirrata*. Found among the rocks at Stotfield. "Common," *Mr. Martin*.

The Tusk, *Brosmus vulgaris*. Rarely met with in the Moray Firth by the Elginshire fishermen, and then almost always in November. Some of the oldest fishermen have caught it only about half a dozen times. It is remarkable that the Tusk should be so very rare in the Moray Firth, seeing that it is so frequently found in the Shetland seas, where it is highly and justly esteemed.

The Plaice, *Platessa vulgaris*. "The Plash Fleuk." (Leobag, Leopag, a generic name in Gaelic apparently standing for the English word, Flounder). Abundant on the coast. To be obtained at all seasons; but in best condition for the table in April,—at least so say the fishermen.

The Flounder, *Platessa Flesus*. "The Fresh-water Fleuk." Most abundant. Comes up the Lossie as far as Newmill, near Elgin.

Common Dab, *Platessa Limanda*. "The Gray Fleuk." Abundant and in season at the same time as the plaice. This is the species most frequently found in the Elgin market.

Lemon Dab, *Platessa microcephala*. "The Sole Fleuk." It is somewhat singular to find the fishermen of Moray, like those of Devonshire, applying the name "Sole" to this species. To the real but more common sole, the former in this district invariably give the name of "Tongue-fish."

The Holibut, *Hippoglossus vulgaris*. "Turbot." (Bradan leathan,

that is, the "Flat Salmon"). Very common in the Moray Firth, and frequently killed of a large size. Most abundant in March, generally found with the "Rock-cod."

One of the Stotfield fishermen found a human jaw-bone and teeth in the stomach of a holibut. "They take," say the experienced fishermen, "a haddock or a whiting; but nothing so tempting to a holibut or skate as a 'Plash Fleuk' for a bait." Reported to be very abundant about Peterhead, and in the mouth of the Firth.

The Turbot, *Rhombus maximus*. "Roddan Fleuk." Often taken with a herring or sand-eel as bait, in July and August, and at times killed very near the shore. It remains to be proved whether the reputed scarcity of the turbot in the Moray Firth be owing to an absolute scarcity, or to the imperfect means that have as yet been adopted to search for and secure it.

The Brill, *Rhombus vulgaris*. "The Bastard Turbot." Occasionally killed in the Firth, and sold as turbot.

The Sole, *Solea vulgaris*. "The Tongue-fish." Frequently caught although not purposely fished for. A good locality is known to lie between Covesea and Stotfield-head, in twenty-four fathom water.

The Bimaculated Sucker, *Lepidogaster bimaculatus*. A specimen, $1\frac{1}{2}$ inch in length, was lately discovered by the Rev. James Weir, of Lossiemouth, on a shell drawn up by a fisherman's lines. From the notices given by Yarrell, Jenyns, and Fleming, of the localities in which this beautiful little fish has hitherto been found, it appears that Lossiemouth is the first Scottish station where it has been observed.

The Lump Fish, *Cyclopterus Lumpus*. "Paddle Cock." Common in the Firth. One obtained in the canal of the Loch of Spynie in 1834. The skins of this fish are not unfrequently met with on the shore, after, it is said, the carcass has been eaten by the seal, (Zool. 3157).

The Sharp-nosed Eel, *Anguilla acutirostris*. (Easgann). Most abundant in fresh water, and about the mouths of rivers and in harbours. As elsewhere, the migrations of the young have been observed here; but it has yet to be discovered what powerful instinct it is that leads them to thread their way in such multitudes up the bare moist rocks of rivers, as at the fall of the Lossie, &c., where the rock they have to scale is some feet perpendicular.

The Conger, *Conger vulgaris*. "Haaf Eel." (Easgann faragidh). Common in the Moray Firth. Tarbetness is said to be a place where they abound; they are also reported by the fishermen as being fond of swimming about a newly tarred boat.

The Anglesea Morris, *Leptocephalus Morrisii*. One of these very rare fishes was found dead on the beach eastward of Lossiemouth in 1839, by Mr. Martin.

The Sand Eel, *Ammodytes Tobianus*. One found in the stomach of a cod, 1850.

The Sand Launce, *Ammodytes Lancea*. "Saneels." Abundant, and frequently used as bait: they spawn in May.

The Great Pipe Fish, *Syngnathus Acus*. One in the stomach of a cod-fish, Dr. Innes. Another found in a similar situation in 1850.

The Straight-nosed Pipe Fish, *Syngnathus Ophidian*. Gamrie, Rev. G. Harris, (Zool. 3119).

The Worm Pipe Fish, *Syngnathus Lumbricus*. Gamrie, Rev. G. Harris, (cover of Zool. No. 110).

The Short Sun Fish, *Orthogoriscus Mola*. In August, 1846, and again in October, 1850, specimens of this fish were taken in the Moray Firth. In the latter year, one of the shoal which seems to have approached the east coast of the Island that season, had, according to Mr. Martin, the following dimensions in inches: — entire length from point of the nose to extremity of the caudal fin, 21; depth, including dorsal and anal fins, $34\frac{1}{2}$; from nose to eye, 3; from nose to front of pectoral fin, 7; caudal fin, $3\frac{1}{2}$; the dorsal and anal fins 10 each, with 15 rays; the pectoral had 11 rays. This species has also been taken at Troup-head, (Zool. 3280).

The Oblong Sun Fish, *Orthogoriscus oblongus*. One obtained at Burghead, 3 feet long, was exhibited a few years ago as a curiosity at Elgin, Mr. Martin.

II.—Fishes with a Cartilaginous Skeleton.

The Sturgeon, *Acipenser Sturio*. In the years 1833, 36, and 44, specimens of the "royal fish" were caught on the south side of the Moray Firth. Yarrell records the capture of one near Findhorn in 1833, which measured 8 feet 6 inches in length, and weighed 203 lbs.

The Small Spotted Dog-fish, *Scyllium Canicula*. Lossiemouth, Mr. Martin.

The Blue Shark, *Carcharias glaucus*. One killed at Helmsdale, November, 1834,—*Trans. Wern. Soc.*

The Porbeagle, *Lamna Cornubica*. One of six that were sporting in the bay of Lossiemouth, was caught there in the salmon-net, August 25, 1845, and exhibited in Elgin. Length, 7 feet; the last branchial opening oblique.

The Fox Shark, *Alopias Vulpes*. Fortrose, 1846, Mr. Martin.

The Piked Dog-fish, *Acanthias vulgaris*. (Cu-maire, i. e. Sea-dog, Gobag, Bioarach, - Beerach). Most abundant in the Firth, and very destructive to the ordinary lines, and especially to the herring-nets.

The Greenland Shark, *Scymnus borealis*. At Trouphead, (Zool. 3058).

The Spinous Shark, *Echinorhinus spinosus*. At Gamrie, (Zool. 3057).

The Sharp-nosed Ray, *Raia oxyrhynchus*. "White Skate." (Scad, - Skacht).

The Skate, *Raia Batis*. "Blue or common Skate."

The Thornback, *Raia clavata*.

The Starry Ray, *Raia radiata*.

The fishermen at Lossiemouth enumerate three kinds of skate : — the common or "blue" skate, which they think the best and largest, is most abundant in March, and in condition at that season, after which, having deposited their ova, they deteriorate; the "thornbacks" continue good until May, but are at no time so much esteemed as the blue skate; the "white" skate is the rarest of the three. Some of them also describe a ray which they call "Hornies" (horned or full of spines?), about 4 or 5 inches broad, round in shape, with two black spots on the back, and both back and belly full of "spikes" (spines); when taken into the boat they contract themselves into a lump. This is probably the "Homelyn Ray" of Yarrell (ii. 570), or the "Sandy Ray," (Id. 574).

The Lamprey, *Petromyzon marinus*. A fine specimen, 2 feet 9 inches in length, was obtained from Lossiemouth in February, 1849. The fishermen have never caught the lamprey with a bait; but they have seen it fix itself by its mouth on a board that has not been tarred, such as a new rudder, and when thus seen are taken by a basket, or "skoo."

The Lampern, *Petromyzon fluviatilis*. "The Lamper Eel." Often met with in the Spey, Lossie, &c.

The Pride, *Ammocetes branchialis*. Discovered in the Lossie, near Woodside, by Alexander Robertson, Esq., in 1850.

The Myxine, *Gastrobranchus cœcus*. Common. One from a cod-fish, January, 1849; it measured 14 inches in length, and seemed to have been eaten by the cod, as it was partially dissolved by the action of the stomach and gastric juice. This is the fish which the fishermen call the "Eeliart;" it is also the "Pousion Ramper of the Moray Firth,"—*Edinburgh Witness*, February 2, 1849.

Of these 97 fish, about 70 are also found in the Orkney and Shetland seas, from which also at least 97 species are known to have been obtained: 76 of them are also included in Parnell's 'Fishes of the Forth,' which contains 125 species; and 73 are among the 'Fishes of the District of the Land's End' (Zool. 1400, &c.), which admirable paper contains 153 species.

The comparatively small number of species hitherto known to have been found in the Moray Firth and its adjacent waters, is to be accounted for, not so much by any absolute deficiency, as by the absence of observers able and willing to detect the more closely allied species, or to make known the occurrence of others of more marked character, as they are landed from the fisherman's boat, or accidentally stranded on the shore. In this district, it must be remembered, the searching powers of the dredge have almost never been put in requisition, either by the amateur or professional fisherman; and no seines, or trawl, or shrimp nets are ever used, otherwise a considerable addition must have been here made of the smaller species which are caught in other places by these means, but which cannot swallow the baited haddock-hook, or be retained by the meshes of the herring-net. Much then remains to be done in the Ichthyology of the Moray Firth, in the discovery of species new to it, as well as in recording the occurrence of those that are rare, and in ascertaining more accurately and fully the as yet little known habits, migrations, &c., of all. Incomplete as the above list is, it will be seen that it would have been much more deficient, had not Mr. Martin, of Anderson's Institution, Elgin, been able to supply many notices of the more common, as well as of the rarer species. It is hoped that those whose places of residence favour such observations, will, as opportunity offers, add to the present enumeration, until the catalogue be worthy of the field which it has assumed.

The evanescent and mephitic nature of the fishy substance, and the great similarity, to the unpractised eye, that subsists between really different species, have been the chief obstacles to people otherwise desirous of making suitable observations. The progress of Natural History, or the increasing desire for a knowledge of the varied works of creation, will perhaps by and by quicken the senses in the one case and blunt them in the other; so that no fish caught or cast ashore in this district, and at all suspected to be rare or new to the Fauna of Moray, will be neglected or destroyed without having "a local habitation and its name" duly assigned to it in the great system of Nature.

GEORGE GORDON.

March, 1852.

X.

2 A

Exuviation of the Crustacea. — “The crustacean class of animals, of which the lobster, crab, and shrimp are familiar examples, have this peculiarity of structure — that their soft bodies are inclosed within a coat of mail formed of carbonate and phosphate of lime. In fact, they carry their skeleton outside their bodies, both for defence of the vital parts within, and for the attachment of the muscles which move their limbs, and every part of their frame. No warrior of old was ever more completely enveloped in his hard coat of mail, with its jointed greaves and overlapping scales, than is the lobster in its crustaceous covering; with this exception, that the warrior could at pleasure unbuckle himself from his armour, whereas the body and limbs of the Crustacea are completely incased in hollow cylinders, firmly and accurately jointed, from which there is no such ready release. Now, as this shelly integument envelopes them from their earliest youth, and as it does not expand and grow, the natural growth of the soft body beneath would be entirely prevented, did not nature supply a remedy of a very curious kind — the exuviation, or periodical throwing off of the external crust, and the formation of a larger shell-covering, fitted for the increasing growth of the animal. This is a circumstance which has long been familiar to naturalists, and indeed the most ordinary observer must have often remarked in the crabs and lobsters brought to table, appearances indicative of their change of external coverings. In the back of the edible crab, may often be noticed a red membrane lining the inner side of the shell, but so loose as to be readily detached. Along the greater part of its course this membrane has already assumed a half-crustaceous consistence, and is just the preparatory process to the old shell being thrown off by the animal. There is another curious circumstance which has also been long known — that crabs and lobsters can renew lost limbs. Some misconception, however, had existed regarding the manner in which this was effected, until the observations of the late Sir John Dalyell have thrown more accurate light on the subject. This most amiable and eminent zoologist, who was lost to science last year, afforded a pleasing illustration of the solace and delight which the pursuit of the study of Nature yields to the diligent inquirer into her mysteries. With a feeble constitution and frame of body, which precluded his mingling in the more active pursuits of everyday life, this sedentary philosopher collected around him examples of minute and curious being from the depths of the ocean, from lake and river, and for many long years found the delight of his leisure hours in watching the habits of the animals, and in discovering and describing many singular circumstances in the constitution of their bodies, and the peculiar adaptation of their structure and instincts to their modes of existence. One of his last communications to the public, imparted with all the modesty and simplicity of true genius, at the last meeting of the British Association in Edinburgh, was on this subject of the exuviation of the Crustacea.* It appears from Sir John’s observations that crustaceans begin to throw off their shells at a very early period of their life, even in that embryo state in which they first appear after having left the egg, and before they have yet assumed the real form of their mature state. During every successive exuviation in this embryo state, they assume more and more of their perfect and established form. While the crab is young and rapidly growing, frequent exuviations take place at short intervals, from three to five times in the course of one year. Previous to the change, the animal almost ceases to feed, and becomes rather inactive; the proper time having at length arrived, exuvia-

* ‘Report of British Association, 1851.’ Pp. 120-122.

tion is effected in the course of a few hours, body and limbs being alike relieved from their hard covering. Until the new shell acquires firmness and strength, the creature is very shy, and, in the state of nature, retires into cavities below rocks or heaps of protecting sea-weed. Sir John had kept for some time one of our smaller species of shore-crabs (*Carcinus Menas*), of medium size, of a brown colour, with one white limb. One summer evening it was put outside the window in a capacious glass vessel of seawater. In the morning a form exactly resembling its own, only somewhat larger, lay in the vessel. This was the same animal, which had performed exuviation and extricated itself from the old shell during the night. The resemblance between both forms was complete—everything was the same, even the white limb was seen in both. Another specimen kept was of smaller size, the opposite extremities of the limbs being only 13 lines asunder; its colour was green, with three white patches on the back. In the course of little more than a year five exuviations took place at irregular intervals, the new shell and animal becoming larger each time. The third shell came on uniformly green, the white spots being entirely obliterated. On the fourth exuviation, the limbs expanded $2\frac{1}{4}$ inches. From the long slender form of the limbs of Crustacea, they are very liable to mutilation. Crabs are also a very pugnacious family, and in their battles limbs are often snapped off. These mutilations, however, are readily repaired; although, contrary to what was the common belief, the restoration takes place only at the next regular period of exuviation. The full-grown common crab (*Cancer Pagurus*) is of a reddish brown colour, the claws tipped with black; but some of the young are naturally of the purest white, which remains long unsullied. This does not arise from confinement, which, according to Sir John, has no influence on colour. 'A young white specimen of the common crab was subjected to observation on 29th September. The body might have been circumscribed in a circle three-quarters of an inch in diameter, and the extended limbs by one-and-a-half inch in diameter. Its first exuviation ensued on the 8th of November, the second on the 30th of April following, and the shell then produced subsisted till 12th September, when another exuviation took place, introducing a new shell of such transparent white that the interior almost shone through it. All the shells were white, and increased somewhat in size successively. This last shell of 12th September subsisted until 29th March, being 197 days, when it was thrown off during another exuviation.' But what was remarkable, the animal now had only the two large claws, the other eight limbs were deficient. 'Resting on its breast as it was, I did not at first discover the fact, that the creature presented a strange and very uncouth aspect. However, it fed readily, and proved very tame, though helpless; often falling on its back, and not being able to recover itself, from the deficiency of its limbs. I preserved this mutilated object with uncommon care, watching it almost incessantly day and night; expecting another exuviation which might be attended with interesting consequences, I felt much anxiety for its survivance. My solicitude was not vain. After the defective shell had subsisted eighty-six days, its tenant meantime feeding readily, the desired event took place in a new exuviation on the 23rd of June. On this occasion a new animal came forth, and in the highest perfection, quite entire and symmetrical, with all the ten limbs peculiar to its race, and of the purest and most beautiful white. I could not contemplate such a specimen of Nature's energies restoring perfection, and through a process so extraordinary, without admiration. Something yet remained to be established: was this perfection permanent, or was it only temporary? Like its precursor, this specimen was quite tame, healthy, and vigorous. In 102 days it underwent

exuviation, when it appeared again, perfect as before, with a shell of snowy white, and a little red speckling upon the limbs. Finally, its shell having subsisted 189 days, was succeeded by another of equal beauty and perfection, the speckling on the legs somewhat increased. As all the shells had gradually augmented, so was this larger than the others. The extended limbs would have occupied a circle of four inches in diameter. About a month after this exuviation the animal perished accidentally, having been two years and eight months under examination. It was an interesting specimen, extremely tame and tranquil, always coming to the side of the vessel as I approached, and holding up its little claws as if supplicating food.' The shrimp when in confinement becomes very tame, and readily exuviates. The process is frequent, the integument separates entire, and is almost colourless. In female crustaceans the roe is placed outside the shell to which it adheres. During the period of such adherence, the female crab, so far as observation goes, does not change its shell—a marked provision of Nature to preserve the spawn."—*Chambers's 'Edinburgh Journal,' April 17, 1852, p. 248.*

Anecdotes of a Spider.—The following pleasing and minute history of a spider, from the pen of the poet Goldsmith, is quoted in Washington Irving's interesting 'Life' of that amiable man, from 'The Bee,' a periodical on the plan of 'The Spectator,' 'The Tatler,' and 'The Idler,' conducted, and for the most part written by Goldsmith. During this portion of his literary career, when he was literally, to quote his own words, "a bookseller's hack,"—writing for bread at so much per sheet, and with characteristic want of prudence spending and giving away his hard-won money much faster than he earned it,—watching the habits of the "long-legged spinners," the fellow-occupants of his chambers in the Temple, evidently furnished the poet with a delightful relaxation from his labours. He writes,—“Of all the solitary insects I have ever remarked, the spider is the most sagacious, and its motions to me, who have attentively considered them, seem almost to exceed belief. I perceived, about four years ago, a large spider in one corner of my room making its web; and, though the maid frequently levelled her broom against the labours of the little animal, I had the good fortune then to prevent its destruction, and I may say it more than paid me by the entertainment it afforded. In three days the web was, with incredible diligence, completed; nor could I avoid thinking that the insect seemed to exult in its new abode. It frequently traversed it round, examined the strength of every part of it, retired into its hole, and came out very frequently. The first enemy, however, it had to encounter was another and a much larger spider, which, having no web of its own, and having probably exhausted all its stock in former labours of this kind, came to invade the property of its neighbour. Soon, then, a terrible encounter ensued, in which the invader seemed to have the victory, and the laborious spider was obliged to take refuge in its hole. Upon this I perceived the victor using every art to draw the enemy from its stronghold. He seemed to go off, but quickly returned, and when he found all arts in vain, began to demolish the new web without mercy. This brought on another battle, and contrary to my expectations, the laborious spider became conqueror, and fairly killed his antagonist. Now, then, in peaceable possession of what was justly its own, it waited three days with the utmost impatience, repairing the breaches of its web, and taking no sustenance that I could perceive. At last, however, a large blue

fly fell into the snare, and struggled hard to get loose. The spider gave it leave to entangle itself as much as possible, but it seemed to be too strong for the cobweb. I must own I was greatly surprised when I saw the spider immediately sally out, and in less than a minute weave a new net round its captive, by which the motion of its wings was stopped; and, when it was fairly hampered in this manner, it was seized and dragged into the hole. In this manner it lived, in a precarious state; and Nature seemed to have fitted it for such a life, for upon a single fly it subsisted for more than a week. I once put a wasp into the net; but when the spider came out in order to seize it as usual, upon perceiving what kind of an enemy it had to deal with, it instantly broke all the bands that held it fast, and contributed all that lay in its power to disengage so formidable an antagonist. When the wasp was set at liberty, I expected the spider would have set about repairing the breaches that were made in its net; but these, it seems were irreparable: wherefore the cobweb was now entirely forsaken, and a new one begun, which was completed in the usual time. I had now a mind to try how many cobwebs a single spider could furnish; whereupon I destroyed this, and the insect set about another. When I destroyed the other also, its whole stock seemed entirely exhausted, and it could spin no more. The arts it made use of to support itself, now deprived of its great means of subsistence, were indeed surprising. I have seen it roll up its legs like a ball, and lie motionless for hours together, but cautiously watching all the time: when a fly happened to approach sufficiently near, it would dart out all at once, and often seize its prey. Of this life, however, it soon began to grow weary, and resolved to invade the possession of some other spider, since it could not make a web of its own. It formed an attack upon a neighbouring fortification with great vigour, and at first was as vigorously repulsed. Not daunted, however, with one defeat, in this manner it continued to lay siege to another's web for three days, and, at length, having killed the defendant, actually took possession. When smaller flies happen to fall into the snare, the spider does not sally out at once, but very patiently waits till it is sure of them; for, upon his immediately approaching, the terror of his appearance might give the captive strength sufficient to get loose; the manner, then, is to wait patiently, till, by ineffectual and impotent struggles, the captive has wasted all its strength, and then he becomes a certain and easy conquest. The insect I am now describing lived three years; every year it changed its skin and got a new set of legs. I have sometimes plucked off a leg, which grew again in two or three days. At first it dreaded my approach to its web, but at last it became so familiar as to take a fly out of my hand; and upon my touching any part of the web, would immediately leave its hole, prepared either for a defence or an attack."

Insects impaled on Thorns. — Having seen a request from Mr. Douglas, for facts respecting insects impaled on thorns, I beg to communicate a curious instance which fell under my notice last August, at Rhyl, on the north coast of Wales, in the hope that it may prove new to some of your readers. While there, I took several specimens of *Anomala Julii*, impaled on the thorny blades of the bent grass, which covers the sand hills along the shore, and in each of these cases the thorn was firmly stuck into the under side of the body of the beetle, the head *not* being towards the thorn; so that the insects at first sight looked as if they were clinging to the grass, especially as they were quite perfect, though apparently dead some time. In this instance at least

I do not think it possible that the wind could have been the cause, as has been suggested; the position of each was too uniform, and the cases of the beetles too hard, in my opinion, to be pierced in that way.—*Arthur R. Hogan; Charlton, Dundrum, near Dublin, May 8, 1852.*

On Rearing Larvæ of Micro-Lepidoptera.—In his 'Entomologist's Companion' Mr. Stainton has made known the method invented by Mr. Gregson, of rearing larvæ of Micro-Lepidoptera by means of jam-pots covered with glass; and having tried this plan I can speak to its general efficiency. But as the food will seldom keep sufficiently fresh for more than a week, I think worth making known a method that I have adopted, whereby it is preserved much longer. It is simply to put the ends of the leaves or stems into a small glass phial, 2 inches long, previously filled with water, and thus the food will keep fresh for three or four weeks, a matter of great importance to the larvæ, and no small convenience to the collector, when the food-plants happen to grow at a distance.—*J. W. Douglas; Lee, May 7, 1852.*

List of Lepidoptera taken at Lower Guiting, on the Cotswolds, Gloucestershire:—

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| <i>Colias Edusa</i> , one male, September 15. | <i>Notodonta Dromedarius</i> , two larvæ on hazel. |
| <i>Thecla Rubi</i> , common, middle of May. | <i>N. Tritophus</i> , one larva on hazel, pierced by an <i>Ichnæumon</i> . |
| <i>Polyommatus Alsus</i> , uncommon, beginning of July. | <i>N. Chaonia</i> , two larvæ on hazel. |
| <i>P. Acis</i> , scarce, two, end of June. | <i>Clostera curtula</i> , scarce, pupæ under the bark of willows. |
| <i>P. agestis</i> , common. | <i>Acronycta Ligustri</i> , scarce, on trunks of trees. |
| <i>Nemeobius Lucina</i> , common, end of May. | <i>Ceropacha flavicornis</i> , larvæ not rare on birch. |
| <i>Melitæa Artemis</i> , common. | <i>C. ocularis</i> , larvæ on aspen. |
| <i>M. Athalia</i> , scarce, beginning of June. | <i>Cymatophora viminalis</i> , larvæ common on willows. |
| <i>Vanessa Cardui</i> , very common in 1851, not a specimen in 1850. | <i>Grammesia trilinea</i> and <i>bilinea</i> (var.), scarce, especially the latter. |
| <i>Ægeria Bembeciformis</i> , one, asleep on a leaf of an apple-tree in the garden. | <i>Apamea unanims</i> , larva found under moss, on a willow tree. |
| <i>Chærocampa Porcellus</i> , two, in garden, hovering over pinks. | <i>A. gemina</i> , common. |
| <i>Smerinthus Tiliæ</i> , pupæ not rare at roots of elms. | <i>Xylophasia sublustris</i> , three, attracted by light in a window. |
| <i>Lithosia rubricollis</i> , in multitudes in a wood about two miles from my residence, consisting of fir and beech. | <i>Cerigo texta</i> , not uncommon, ditto. |
| <i>L. stramineola</i> , one specimen. | <i>Neuria Saponariæ</i> , rather common, ditto. |
| <i>Phragmatobia mendica</i> , common. | <i>Heliophobus Popularis</i> , scarce, ditto. |
| <i>Orgyia Coryli</i> , larvæ plentiful on hazels. | <i>Trachea Piniperda</i> , pupæ at root of a fir tree. |
| <i>Pœcilocampa Populi</i> , pupæ not rare at the roots of ash. | <i>Tæniocampa munda</i> , pupæ at roots of oak? |
| <i>Endromis versicolor</i> , male, captured on the wing, May 25. | <i>T. Populeti</i> , three pupæ at roots of elm? |
| <i>Asteroscopus cassinea</i> , larvæ not uncommon on elm and hazel, but very difficult to rear: out of seventeen larvæ only one came to perfection last year. | <i>T. miniosa</i> , pupæ at roots of elm. |
| | <i>Orthosia macilenta</i> (<i>Hüb.</i>), common at ivy and elsewhere. |

- Tethea subtusa*, three, beaten out of poplar.
Hadena satura, one specimen.
H. adusta, two pupæ in garden.
H. contigua, scarce, on trunks of trees.
H. Genistæ, ditto.
Aplecta tincta, two, in garden.
A. advena, common in garden.
A. herbida, rare, by beating elm and oak.
Xylina semibrunnea, scarce, on ivy and reared.
X. rhizolitha, common on trunks of firs.
Calocampa vetusta, one, on ivy.
C. exoleta, not rare on ivy, and reared.
Acontia luctuosa, very scarce and local, three specimens.
Phytometra ænea, common, but local.
Hipparchus Papilionarius, scarce, two in beech and fir wood.
Ellopia fasciaria, rare, over nettles.
Macaria lituraria, common, in beech and fir wood, by beating.
Eupisteria Hepararia, ditto.
Biston Prodomaria, rare, pupæ at roots of elms, and reared.
- Boarmia Abietaria*, pupæ not rare at the roots of fir, in the above wood.
Eubolia Cervinaria, larvæ common on hollyhocks.
Coremia didymaria, common.
C. Olivaria, scarce, beech and fir wood.
Scotosia Rhamnaria, rare, garden.
Melanippe hastaria, rare, beech and fir wood.
Zerene albicillaria, ditto.
Emmelesia Blomeraria, common, ditto.
Abraxas Ulmaria, extremely common, ditto.
Ephyra trilinearia, common, ditto.
E. Omicronaria, scarce, in lanes.
Bapta temeraria, common, but local.
Eupithecia sobrinaria, three, in garden.
E. subumbraria ? scarce, in garden.
E. innotaria, rare, in garden.
E. consignaria, one, in garden.
E. venosaria, ditto.
E. piperaria, scarce, in garden.
E. tenuiaria, rare, in garden.
Siona dealbaria, one, beech and fir wood.
 &c., &c.

—*T. Greene*; *Halton Rectory, Wendover, Bucks.*

A few Remarks on some of the Species of the Genus Oporabia.—1. *O. neglectata*.—I captured this species in Perthshire, plentifully, in September, 1861, as well as in previous seasons. The insect rests by day high on the branches of the oak, and when disturbed takes wing to other oak-branches to rest. I have never seen it at rest on the trunks of trees, palings, or on rocks, or among short bushes. The colour of this species varies but little, only becoming of a darker shade in a few individuals, but the curved markings are never obliterated. I have not seen a plain variety of it, or a small specimen of either sex. Both sexes have ample wings, which are uniformly of a large size; in the female the wings expand somewhat less, yet still they are more ample in proportion than in the male. The antennæ appear stronger than those of the other species. The constancy in size of this insect, together with the marking in all the specimens, certainly speaks well for specific distinction. 2. *O. dilutata*.—This species varies considerably in size as well as in colour; in fact, this variation being much greater than in the kindred species, will go far to show a characteristic distinction. I have seen a greater number of males having the superior wings quite plain, light and dark varied, than with marked wings. Those entomologists who wish to examine and study the species of this genus, I would recommend to obtain fifty specimens at least of each species, and to compare one lot of specimens with the other, but not to select just one or two specimens only: and insects captured in one (or the same sort of) locality, should be kept separate, and all incidents noted. 3. *O. autumnaria*.—This species is readily separated from Nos. 1 and 2, by the glossy silver and fineness of the wings, and the slenderness of the antennæ. The specimens vary in size as well

as in the shades, some specimens being rather darker, but not without markings. It rests on the branches of birch. I captured a few specimens in Perthshire in 1851, and found it very sparingly in previous seasons. 4. *O. approximaria*, (Gregson, MSS.)—This species is distinguished from No. 3 by the formation of the superior wings of the female, which are pointed, and are also of a smaller size, having a resemblance to No. 5; but the male of this species differs much from that of No. 5, and forms a link between the two species. The males are very variable in size, and some specimens are very dark, in fact there are more dark than light ones. I captured a good number in Perthshire in 1851, located in plantations of spruce fir exclusively; some I found at rest on the trunks. No. 5. *O. filigrammaria*.—This species is smaller than No. 4, particularly the male, which varies in size, colour and marking. I captured a good number of it some years ago, high on the side of Goat Fell, Isle of Arran: I found them only in one spot. The search for this insect is a laborious task; I found it by parting the heath with my hands, and steadfastly looking at the stems of the heath, for there they rest by day. They are so completely wrapped round the heath as to be easily overlooked, and greatly resemble a ring of gray moss that grows in similar situations. No. 6. *O. precursaria*, (Gregson).—This is smaller than all the foregoing species, and differs from the last two in the female having ample wings: the male I have not seen. I reared one specimen from a larva that fed on the heath, in Perthshire, in 1851.—Richard Weaver; Pershore Street, Birmingham, March 16, 1862.

A Continued Buzz from the Bees.—I like the sensible observations of Mr. P. V. M. Filland (Zool. 3398) on Mr. Langstroth's "discovery;" but although I assented to it in part, I do not think it would do to leave the windows of the glass or unicomb hives *always* open, for in one of my own, which was left open accidentally for some days, I found it bedaubed with a substance that nearly prevented me from discovering what I wished. I have not the least doubt that darkness is the natural state of bees, still, I will give your readers my own plan, which is very simple: open the hive very gently, with as little concussion as possible, and at first let the shutters be removed only for a few minutes. Day by day let this be exercised for a quarter or half an hour, choosing if possible a very fine morning, about 10 or 11 o'clock, when a large portion of the bees are at work in the fields. As Shakspeare says,—“How soon even habit becomes nature in a man!”—so it may be, and no doubt is, with animals of all kinds, by domestication. Every lover of bees ought to have the unicomb or show hive; it is of no use except for observation, as the bees never live through the winter: and it is throwing away a good swarm to put it into one of these hives, as they become so crowded as nearly to obstruct all observation. A small cast at the end of June or beginning of July, about one fifth of the size of a prime swarm, is the very thing, as a young queen generally accompanies it. The last one I had, which clustered on a damson-tree, I hived in three minutes and a half; but your readers must bear in mind that there were about six inches of old comb at the top. Independently of this, it is astonishing how quickly these capricious insects will ascend one of these narrow hives at swarming time. I see by the ‘Cottage Gardener’ of February 26, that these unicomb hives are now sold in London; but should Mr. Filland wish to have a pattern of mine, I shall be most happy, as I am so near him, to send it for a fortnight to Ross, when his carpenter could make one from it at a quarter the price. I entirely agree with Mr. Filland that bees are not so blind as Dr. Bevan and other writers would have us believe. They are very quick-sighted at flowers, and if they were to leave the hive singly at first, like humble-bees, people would see what extraordinary observations they would make on

all the objects around, before they become well acquainted with the locality. They arrive at the hives frequently dead beat with fatigue under their heavy loads ; no wonder they sometimes make mistakes. The fecundation of the queen bee is certainly a most wonderful thing. Pluivy says,—"Apum enim coitus visus est nunquam ;" and from that time until the present no one has witnessed it. Mr. Huish repudiates the testimony of the immortal Huber ; but Mr. Huish's theory is not in the least original. The great Swammerdam wrote a hundred years before him, and stated that the queen hive bee was fecundated by "inhaling" an "aura" from the body of the male. Huber is certainly strongly circumstantial in his details, and I am inclined to believe him, even without direct evidence. I have often observed a species of common fly on my lawn, while dancing in the air, remaining connected for about a second or two, and never fall to the ground. This may be the case with bees ; but still, at swarming-time, when I have discovered a queen fallen from defective wings, with a bunch of bees around her, I never discovered a drone near her on the ground, although I firmly believe that the swarming-time is the "Epithalamium" of the hive bee. I will conclude my remarks by mentioning the extraordinary and quick discrimination of bees in a certain way. All idlers and disabled bees are entirely excluded from the hives ; the motto of these insects being,—"He that will not work, neither shall he eat." I have a hundred times endeavoured to introduce bees with defective wings or some other malady into their own hive, but in vain ; the guards rush out, and after a brief sort of court martial, one or other of them will fasten on the disabled bee and fly off with him. Then again, in cold showery weather bees are frequently knocked down, and lie benumbed, unable to move, but still having no bodily defect, and only wanting heat to be revived. I have a hundred times placed some of these bees on the alighting-board when quite unable to walk ; the guards come up to them, but in a second after examination they discover the cause, and knowing there is no bodily defect, they render the benumbed bees every assistance, putting out the proboscis, and exhibiting other signs of friendship. I shall be glad if Mr. Fillard will continue his "Buzz ;" meantime I tell him fairly that I concur with him, and certainly go only part of the way with Mr. Langstroth, who, in my opinion, goes a great deal too far. Mr. Huish was too hasty, and had not patience to make these quiet experiments. — *H. W. Newman ; New House, Stroud, March 4, 1852.*

Notes on Bees and Hives. — Whenever any account reaches us across the Atlantic which seems to border on the marvellous, we are apt to regard it distrustfully, and even to designate it an Americanism. I acknowledge myself to have partaken of this scepticism when perusing Mr. Langstroth's paper on the culture of bees under the constant admission of light. That the late Mr. Huish laboured under an erroneous impression, as to the paralyzing effects of its admission, I have long been convinced, having uniformly observed that the occasional access of light, though somewhat startling to them, had only a temporary effect. But its continuous admission is, I believe, opposed to the opinion and practice, not only of all apiarians of the present, but of all past times, as well as to the habits of bees in their wild state. The earnestness, however, with which Mr. Newman has taken up the subject, will certainly lead me to be more particular hereafter in my observation of the effect of exposing bees to a continuous light. Before I lay down my pen, I wish to say a few words upon the subject to which Mr. Newman has called my attention, that of unicombed hives. From the period at which Mr. Newman was first introduced to one of them, and from the profession of the introducer, I have little doubt of its having taken place at the residence of

J. B. Estlin, Esq., as, about the date referred to, viz., about fifteen years ago, I superintended the construction of one for Mr. Estlin, and assisted him in introducing the first swarm with which it was tenanted. The proceedings of Mr. Estlin were carried on at his drawing-room window, where, in winter, he of course kept a fire; mine in my bed-room window, unaccommodated with a fire. The experiments which I had previously conducted in my own hive, are recorded in the 'Honey Bee' (p. 348 *et seq.*); and I can assure Mr. Newman that it is very possible to extend the existence of a family thus located over the winter, by clothing the two sides of the hive with several layers of flannel or wadding, as I have proved on more than one occasion, without the aid of fire. The opinion of Mr. Huish, on the vivifying effect produced by the drones upon the ova of the queen subsequently to their extrusion, has been pretty nearly exploded, and has given way to that of Huber, in corroboration of which I offer the collateral evidence of what I once witnessed in a couple of humble bees, (see p. 31 of the 'Honey Bee'). Just as I had closed my letter, my attention was called to a paper of Mr. Fillard on the exposure of bees to a continuous light. His opinion is pretty much in accordance with my own; still, as I have adverted to a few other points I am unwilling to withhold my letter.—*Edward Bevan; Hereford, March 27, 1852.*

Notes on a Nest of a Species of Osmia.—In a former volume (Zool. 747) are represented the cocoons of *Osmia tunensis*, placed end to end in the spiral tube of a snail-shell—*Helix nemoralis*. I have just received from Bristol another shell containing the cocoons of an *Osmia*, either *O. aurulenta* or *O. bicolor*. The shell is that of *Helix aspersa*, the whorl of which is double the size of that of *H. nemoralis*, which gives the little architect an opportunity of exhibiting one of those beautiful modifications of instinct in adapting its economy to the means afforded, which we so frequently meet with among insects. It will be observed that towards the upper end of the whorl it of course becomes smaller in diameter; and here the little bee, never at fault, has placed two cocoons in a longitudinal direction. From hence to the mouth of the tube the diameter is sufficient to allow of the cocoons being placed upright, the bee availing itself of the opportunity of economising space, and allowing, if required, of the construction of a much larger number. These upright cocoons are attached to the shell, all on one and the same side only, thus giving the bees space on the other side to effect their exit. This they do by making an opening down the side of the cocoons, not, as they usually do, by gnawing away the top or end; but the bees which occupied the cocoons at the end of the whorl being placed longitudinally in it, removed the end of the cocoon in the usual way. The more we investigate the economy of the insect world, the more are we astonished at the instinctive completeness and beauty of all their works; and probably it reaches its highest degree of development amongst the aculeate Hymenoptera.—*Frederick Smith; May, 1852.*

Proceedings of the Entomological Society.

May 3, 1852.—J. O. WESTWOOD, Esq., President, in the chair.

The following donations were announced, and thanks ordered to be given to the donors:—'The Zoologist' for May; by the Editor. 'Entomologische Zeitung' for April; by the Entomological Society of Stettin. 'The Literary Gazette' for April; by the Publishers. 'The Athenæum' for April; by the Editor. 'Revue et Magasin

de Zoologie,' 1852, No. 3; by M. Guérin Méneville. 'Exotic Butterflies,' by W. C. Hewitson, No. 2; by W. W. Saunders, Esq. A collection of several orders of insects of Ceylon; by Mr. Thwaites, M.E.S. A specimen of *Oryctes Martabani*; by Mr. Pratt.

The President announced that the Society had determined to offer a prize of £5 for the best essay on the duration of life in the queen, males, and workers of the honey bee, the discovery of these points being of much economic value. Each essay to be addressed "To the President and Council of the Entomological Society," without the author's name attached, and to be delivered before the 31st of December; the name and address of the author to be forwarded separately.

Mr. Edwin Shepherd exhibited a male specimen, in fine condition, of *Notodonta Carnelia*, taken by Mr. Hill, on the 2nd instant, at West Wickham Wood, on the trunk of an oak.

The President informed the meeting that among the insects received from Mr. Thwaites, were many rare species, and nearly half the number were unique specimens.

Mr. Adam White exhibited drawings of the nests of two species of spiders; the one, found by S. S. Saunders, Esq., in Albania, was formed of the seed-vessels of *Palurus aculeatus*, four of which were arranged symmetrically, and connected by a web: the other was found by M. Weilenmann, of St. Gall, Switzerland, in a wood near Pernambuco; it was of a grayish white colour, with a penthouse-like roof, on which were seven rows of scale-like appendages, and a row round the margin; it was attached by a pedicel, three inches long, to a leaf. M. Weilenmann informed Mr. White that the spider was small, but Mr. White believed he had seen only the young ones.

Mr. White exhibited specimens of a minute *Podura*, found by Dr. Sutherland on the ice, some miles from the shore of Wellington Channel, under a species of *Nostoc* growing there. It was closely related to the *Desoria glacialis*, *Nicolet*, which M. Desor found among the glaciers of the Swiss Alps, in countless numbers, under stones or on the margins of "crevasses et des baignoires." MM. Desor, Pourtales, and Agassiz also saw them running into ice, apparently very compact, but on breaking off a piece it was found to be pierced with numerous canals, into which the *Desoria* leaped and ran, looking like drops of blood. — (Desor, in 'Bibliothèque Universelle de Genève,' n. s. xxxii. p. 125, pl. 2).

Dr. Sutherland added, in answer to a question from the President, that he only found this *Podura* under the *Nostoc*; and that although it was in plenty, the individuals remained free, and did not assemble in masses after the manner of the common English *Podura*. But he had also found what he thought were two other distinct species, under stones where no *Nostoc* grew.

Mr. White also exhibited some more of the insects collected in the Himalayas by Dr. J. D. Hooker, pointing out especially a beautiful minute *Cicindela*, a *Cercidocerus* with two white lines on the thorax, a *Distenia*, several pretty *Phytophaga*, including *Adimonia variolaris*, *Aplosomyx fasciatus*, &c., the Hemipterous *Pæcilochroma Childreni*, a new spider of the genus *Gastrocantha*, and one of the Myriapodous genus *Zephronia*.

Mr. A. F. Sheppard exhibited specimens of *Halias clorana*, bred from osiers at Fulham, and a *Cerura vinula*, var. *minax*, *Hüb.*

Mr. Grant exhibited twelve specimens of the rare *Adela cuprella*, obtained by repeated visits to the dwarf sallows on Wimbledon Common during the late cold month of April.

Mr. S. Stevens exhibited a fine series of *Goliathus Polyphemus* from Cape Palmas, and of *Callithea Sapphira*, male and female, collected by Mr. Bates at Santarem, on the Amazon river.

The President read the following letter, addressed to him by Mr. Ainger : —

" 2, Carlton Hill, Edgware Road,

" April 17, 1852.

" Sir,

" I observe that at a recent meeting of the Entomological Society, you read a paper of inquiry as to the best method of extirpating cock-roaches.

" I have for many years, and in three different houses, used a plan which gets rid of them more rapidly and more completely than any I have heard of.

" In the kitchen hearth, within the fender, but at one side of the fire, I cut a hole like that made in the street paving for a coal-plate. In this I place a basin holding a little water (beer would perhaps be better), and into this the creatures fall by wholesale until they are nearly exterminated. During the day an iron plate covers the hole.

" I am, Sir,

" Your obedient Servant,

" ALFRED AINGER."

" J. O. Westwood, Esq."

Mr. Douglas read the following note, translated and condensed from the 'Entomologische Zeitung' for April : —

" On *Lithosia depressa* and *L. helveola* ; by Herr Schreiner, Weimar.

" If we compare these two insects, and read the descriptions of the larvæ by Treitschke (Band x. pp. 164-5), we should feel quite convinced that they were distinct species ; but by observing them in nature, both in the larva and perfect states, we may be quite certain that *depressa* is by no means distinct, but only the female of *helveola*.

" I would not lay much stress upon the fact that during many years' experience of myself and others in this and other localities, not one male of *depressa* has occurred, and just as little a female of *helveola*, although this is curious enough ; but I would further mention that although I yearly rear a great many of both kinds from larvæ, which are not scarce in this neighbourhood, mingled together among the lichens upon the common pine (*Pinus picea*), the result is the same. I believe, therefore, that I am correct in putting *depressa*, hitherto accounted to be a distinct species, as the female of *helveola* ; and the following considerations bear out my view : —

" 1. The antennæ of *helveola* are distinctly ciliated, in *depressa*, on the contrary, they are setiform, and only when greatly magnified can a few very fine hairs be observed.

" 2. The larvæ appear at the same time and on the same food, and mostly together.

" 3. They show no striking difference in form, colour, or marking, in these respects not varying more than the caterpillars of most other species.

" 4. The habit and pupation are the same.

" 5. The period of development is exactly alike.

" I must further remark that I indeed have not yet witnessed the coupling, because it would seem to be very brief, and only to take place at night ; however, I have often

obtained the eggs of *depressa*, but never those of *helveola*. Also, on opening the bodies of a number of *helveola*, I could not discover a trace of eggs, whereas the bodies of *depressa* generally contained a great quantity. Unfortunately, I have not yet been able to rear any larvæ from the eggs.

"It is inexplicable to me how these prominent circumstances in the history of these not uncommon insects should have escaped even our latest and best authors; and I feel myself so much the more compelled to incite a more exact examination and inquiry into this and the other species of *Lithosia*."

Mr. Douglas also read the following extract from Mr. Fortune's 'Journey to the Tea Countries of China':—

"In the evening we stopped, with some other boats like our own, near a small village, where we proposed to pass the night. The day had been very warm, and the moschetoës were now becoming very troublesome. The night before this, neither my servant nor myself had been able to close our eyes, and I now saw with dread these pests actually swarming around us. Our boatmen, who heard us talking about them, asked Sing-Hoo why he did not go and buy some moscheto tobacco, which they said might be had in the village, and which would drive all the moschetoës out of the boat. I immediately despatched him to procure some of this invaluable substance. In a few minutes he returned with four long sticks in his hand, not unlike those commonly used for burning incense in the temples, only somewhat longer and coarser in appearance. He informed me they cost only two cash each—certainly cheap enough if they answered the purpose.

"Two of these sticks were now lighted and suspended from the roof of the boat. They had not been burning five minutes when every moscheto in the boat sought other quarters. We were quite delighted, and enjoyed a sound and refreshing sleep, for which we were most thankful. I had always dreaded these insects during this journey, as I did not carry curtains with me on account of their bulk. I now found, however, that there was no need of them wherever we could procure the moscheto tobacco.

"Various substances are employed by the Chinese to drive away moschetoës. This which we had just purchased was made with the sawings of resinous woods—I believe procured from juniper trees—and mixed with some combustible matter to make it burn. A piece of split bamboo, three or four feet in length, is then covered all over with this substance. When finished it is as thick as a rattan or small cane. The upper end of the bamboo has a slit in it, for hooking on to a nail in the wall or the roof of a boat. When once lighted, it goes on burning upwards until within six inches of the hook, beyond which there is no combustible matter, and it then dies out. A somewhat fragrant smell is given out during combustion, which, at a distance, is not disagreeable. Sometimes the saw-dust is put up in coils of paper, and is then burned on the floors of the houses. Various species of wormwood are likewise employed for the same purpose. The stems and leaves of these plants are twisted and dried, and probably dipped in some preparation to make them burn.

"The moscheto has a mortal aversion to all these substances, and wherever they are burning, there the little tormentors will not come. I procured the sticks in question, and burnt them daily after this; and although the insects were often swarming when I entered the boat or an inn, the moment *their* 'tobacco' was lighted they quickly disappeared, and left me to sit at my ease, or to enjoy a refreshing sleep. Whoever

discovered this precious tobacco, was a benefactor to his country, and should have been honoured with the blue button and peacock's feather at the least. But I suppose, like all other Chinese discoveries, it is so old that the name of its original discoverer cannot now be traced."

The following memoirs were read :—

1. Descriptions of five new butterflies, by W. C. Hewitson, Esq., with two coloured plates.

Papilio Telearchus. Hab. Sylhet.

Allied to *P. Paradoxa*, but larger; different in the contour of the wings and in the relative distance of the blue spots from the outer margin.

Papilio Pausanias. Hab. Surinam and the Amazon.

Allied to *P. Choridamas*, and especially interesting from its close resemblance to *Heliconia Clytia*. Found by Mr. Bates "at the edge of the water of the Lake of Ega when the river is falling."

Papilio Chabrias. Hab. Amazon.

Allied to *P. Triopas*. The male flies high in pathways of the forest, the female flies low.

Papilio Orellana. Hab. Amazon.

An unique species in the collection of Mr. Bates.

Papilio Sakontala. Hab. Sylhet.

Allied to *P. Polytes*, *Cramer*. Unique in Mr. Hewitson's collection.

2. Descriptions, with figures, of some of the Coleoptera collected in China by Mr. Fortune. By W. W. Saunders, Esq.

3. Descriptions of some of the Hymenoptera collected in China by Mr. Fortune. By F. Smith, Esq.

4. Description of a new Brazilian Hemipterous insect, *Dinidor gibbus*. By W. S. Dallas, Esq.—*J. W. D.*

Proceedings of the Society of British Entomologists.

April 6, 1852.—MR. HARDING, President, in the chair.

The President exhibited a box of insects taken this season, among which were to be seen specimens of *Xanthia croceago*, *Ennomos illustraria*, *Theristis Acinacidella*, and a specimen of *Mesosa nubila*, taken at Hanging Wood, on March 3.

The President also exhibited, on behalf of Mr. Oxley, who was at present at Rochdale, a box of insects, among which were some fine specimens of *Ceropacha flavicornis*; and stated that a friend of his had informed him that he had found some dozens of the wings of this insect at the foot of an oak in Plumstead Wood, the insect having without doubt been destroyed by birds.—*J. T. Norman.*

Greenwich Natural History Society.

With this title a Society has been established at Greenwich, under the Presidency of G. Busk, Esq., F.R.S., for the purpose of investigating the Natural History of the district, and bringing together for mutual instruction those persons who take an inte-

rest in Natural-History matters. The meetings are to be held every alternate Thursday evening, at the Lecture Hall, Greenwich, and the subscription has been fixed at half a guinea a year, in order to bring it within the means of the many.

Occurrence of various Birds at Ross, Dumbartonshire.—I send a few notices of the occurrence of birds, some of which may perhaps be interesting. At the end of April, 1848, I shot a female of the shoveller, and found the nest, containing twelve eggs; nine of them were put under a common hen, and the ducklings came out in three weeks, but although every attention was paid to them, they died in a short time. In April, 1849, I killed a fine male of the black-tailed godwit, in full breeding plumage, the only instance of its occurrence in this district. The storm and fork-tailed petrels have been found dead or in a dying state; and the spotted crane is occasionally killed. On the 12th of last September I shot a female of the pintail, the only time it has been found here to my knowledge; but what I mention it for is to ask whether it is not early for that species to make its appearance? There were about a dozen, apparently of the same kind, along with it. And to conclude, a cream-coloured starling had been seen in this neighbourhood for some time, until it was shot about the end of September.—*George H. Leith; Ross, Dumbartonshire.*

Nest and Eggs of the Black Redstart, (Phoenicurus Tithys).—On Saturday, May 8, two sons of Mr. Fowke, Hagley Farm, while birds'-nesting at Rongdon, near here, found in a heap of thorns lying near the hedge, a nest, which they brought to me. It was about a yard from the ground, the outside composed of straw or dried grass and moss, then moss and wool, finer towards the inside; lining there was none, unless one stray feather and about half a dozen black horse-hairs can be so termed. The eggs, four in number, were of a beautiful white with a shade of pink, much larger than those of the hedge Accentor, when blown they were exquisitely white. I shall be happy to submit the nest and one or more of the eggs to the examination of more competent judges than myself. The outside of the nest has unfortunately been removed. If not the eggs of the black redstart, what are they? — *R. W. Hawkins; Rugely, Staffordshire, May 18, 1852.*

Singularly situated Nest of the Ox-eyed Tit, (Parus major).—On the 29th of April last a servant of Mr. Parke's, on leaving work, placed a cup out of which he had been drinking in a hole in the garden-wall. The next day, on taking down the cup, he found that a bird had commenced building in it. On the 6th of May, or just one week after, he took the old bird on the nest, which then contained eleven eggs. The nest and seven of the eggs came into my possession; the latter are larger than usual, and thinner in the shell, and the markings or blotches, rather than spots, very pale. The nest presented nothing particular, either in materials or construction. The bird must have laid more than one egg per day. I had the other day an instance of the ox-eyed tit building in a hedge-bank.—*Id.*

Note on the Nest of the Marsh Tit.—A pair of marsh tits made their nest this spring in a rat's hole, about sixteen inches from the opening of the hole, which was in a lawn, closely mown and sloping a little to the south. The cole tit has been previously observed to nest in such a situation, but, as far as I know, the marsh tit has not.—*J. H. Gurney; Easton, May 19, 1852.*

Note on the Little Bittern.—A little bittern was killed on the 17th instant at Somerton in this county. It was a young male, but had very nearly completed the

assumption of the adult plumage. The bird was fat, and the stomach contained the caudal moiety of a roach, the anterior portion of which appeared to have been digested, but which, when entire, must I think have been four inches in length, besides the tail.—*Id.*

Occurrence of the Hoopoe (*Upupa Epops*) *in Norfolk*.—Four specimens of the hoopoe (a male and two females, the sex of the other I did not ascertain) have been killed in Norfolk within the last month.—*L. H. Irby; Saham, Norfolk, May 17, 1852.*

Occurrence of the Wood Sandpiper (*Totanus glareola*) *at Yarmouth*.—Three immature specimens of the wood sandpiper, a male and two females, were killed at Yarmouth on the 22nd of April.—*Id.*

Occurrence of the Avocet at Yarmouth.—A pair of avocets, male and female, were killed at Yarmouth on the 22nd of April.—*Id.*

Occurrence of the Hebridal Smelt (*Osmerus Hebridicus*) *and other rare Fishes at Redcar*.—On the 5th of February last, I found at this place a fine specimen of the Hebridal smelt (*Osmerus Hebridicus*); and during that and the following month I also found forty specimens of the argentine, one of the Anglesea Morris, and one of the lesser forked beard. During last autumn and winter the following fishes have also been obtained here:—four specimens of Ray's bream, two of Müller's top-knot, and one of the black fish, (*Centrolophus Pompilus*). Mr. Yarrell has inspected the above smelt, and pronounces it to be the Hebridal smelt of his work ('British Fishes,' Supplement); but had discovered since the publication of that Supplement, that it is the *Salmo silus* of Müller's 'Prodromus,' p. 49, sp. 418; *Coregonus silus* of Nilsson's 'Prodromus,' p. 19, sp. 8; of Cuvier's 'Règne Animal,' ii. 308, note 1; and of Bonaparte's 'Systematic Catalogue of the Fishes of Europe,' p. 24, sp. 127.—*J. S. Rudd; Redcar, May 17, 1852.*

Note on Fish Spawn, taken out to Hobart Town.—I beg to acquaint you of the premature appearance of the trout and salmon from the spawn placed under my charge for conveyance to Hobart Town. We observed them for the first time on the 29th of February, being fifteen days before the time you stated: and as we have two sorts, I conclude they are trout and salmon, we can distinctly see the bright silvery side of the one, the other is not so large and well formed, but it must be the salmon. We have also another kind, which we cannot account for; it is a long dark fish, such as are seen in the ditches in England: I imagine they must have come on board with the water. We gave the spawn water at the rate of 24 gallons per day until within the Tropics, after which 36 gallons, and immediately on losing the trade winds eight times per day, or 48 gallons. All the eggs lying on top of the gravel became addled, those in the interstices retained their bright appearance throughout. I am afraid the tub will be too small for them, as by the time of our arrival they will be a tolerable size, but you may depend upon the greatest attention being paid them, as I feel perfectly aware of the great acquisition such a shipment must be to the colony. You shall hear from me by every opportunity, and I hope favourably.—*Daniel Smith; in a letter to Mr. Boccius, dated "Barque Columbus, lat. 1° 30' N. long. 21° 30' W., March 9."*

[The three kinds of fish spoken of by Mr. Smith are the two kinds of trout in the Wandle; the other, which he thought he had seen in ditches in England, is the salmon.—*G. B.*]

Remarkable Instinct of a Pony. — Every fresh instance of the wonderful sagacity of animals must be interesting to those who make Natural History their study : although one reads of extraordinary cases of instinct as remarked by many persons, yet every new case, as it comes home to one, seems stronger than before, till at length the boundary line between instinct and reason becomes very narrow and ill-defined. In my Notes on Norwegian Natural History, I have had occasion to make mention of a very sagacious pony I brought from Norway ; this pony has lately exhibited such wonderful instances of sharpness, that in justice to her they ought to be recounted. During the past summer, autumn, and winter, while their masters were abroad, this pony, in company with another brought at the same time from Norway, had a holiday at grass. They not only enjoyed perfect rest from work, but very soon perfect liberty, inasmuch as no common or uncommon fastenings, no devices of the groom availed ; they could unfasten, undo, or untie every gate, and ranged at will wherever their inclination led them. For some time they were the companions of a foal of last year, which, being a great beauty, was treated to two feeds of corn every day, a luxury denied to the Norsk ponies ; but one of them, not understanding the meaning of such partiality, and having been brought up with somewhat of republican opinions, always contrived to get through the door of the shed which divided her from the foal's dinner, and to share the oats with him. Various were the contrivances of the groom to baffle the pony's ingenuity, but they all signally failed. If he tied the door with a stout rope, the pony knew how to pick out the knot with her teeth ; if he fastened it with a chain and staple and wooden peg, no sooner was his back turned, than the peg was drawn and the gate undone : at length, tired of being so often beaten, the man barred the entrance to the shed with a heavy rail ; this was a sore trial to the poor pony, and the man looked on from a little distance with a complacent smile, and rubbed his hands with glee at the victory he had at last achieved, as he saw the pony make fruitless efforts to lift off the heavy rail with her neck ; but her strength was unequal to this, and she seemed at once to give it up in despair, for she turned round and trotted off to her companion. But what was the astonishment of the groom to see her return to the rail with help ! She had persuaded her friend, the other Norwegian pony, to come to her aid ; they both together put their necks under the rail, and now what one could not accomplish, the combined strength of the two achieved ; the rail was thrown down, and the way to the corn cleared. I do not know what means at length succeeded in baffling the pony, but when no longer able to come at the door, she managed to take down the shutter of the shed, and feast her eyes at any rate upon the corn. On a subsequent occasion, when these two Norwegian ponies were confined in a yard, they so repeatedly unfastened the gate (whatever might be the new device of the groom to render it secure), and made their escape, that nothing would avail but to nail it up with some stout tennenny nails, when all other means had been tried and failed. After such instances as I have mentioned above, of ingenuity, determination on a plan, communication with another, successful carrying out of the proposed manœuvre, and overcoming of the difficulty, I feel some scruple in assenting to the logical definition of man as " animal rationale," for I have my doubts if the epithet is peculiar to him alone. — *Alfred Charles Smith ; Old Park ; Devises, June 8, 1852.*

Note on the Rev. A. C. Smith's Anecdote of a Cat. — Without affecting to give an explanation of the habit of the cat referred to by the Rev. A. C. Smith, in the May number (Zool. 3452), I may mention that a cat, lately in the possession of the Rev. Mr. Wilson, of this parish, had adopted the same method of feeding, and continued it

so long as he lived. He was first observed to employ it in partaking of liquids; but very soon solids came to be treated after the same fashion. We had no doubt as to how the habit had been acquired in this case. The housemaid, on removing the tray from table, had not been over particular in stowing away the china, among other things the cream-jug with its contents. The discovery was soon made by Gibby, and the cream was an object sufficiently inviting; but the narrowness of the mouth of the vessel which contained it effectually prevented the entrance of the head, and of course the application of the tongue, after the usual method of cats. The natural alternative was the introduction of the paw; and finding he could gratify his palate by that expedient, it was ever after employed under similar difficulties, and very frequently in partaking of his regular allowance from his accustomed platter. I am informed, indeed a shrewd friend assures me, that rats can overcome far greater impracticabilities in the way of feeding, than is implied in the above: and affirms that he has frequently known them empty a vessel of oil, kept for the use of barn machinery, by introducing their tails into the vessel through a comparatively narrow opening, withdrawing the oil as it adhered, licking it off, and thus repeating the process so long as any of the oil remained.—*George Harris; Manse of Gamrie, May 24, 1852.*

On the Occurrence of the Cedar Bird (Ampelis Carolinensis) in England. By ALFRED NEWTON, Esq.

I SHOULD apologize to the readers of the 'Zoologist' for the length of time I have kept them in suspense with regard to the particulars of the occurrence of the cedar bird of America in this country, which I announced in September last, (Zool. 3277); and I must express my regret that the excuse which I now offer for having so long delayed the fulfilment of the promise I then made, is of a very unsatisfactory nature. It is, that the bird I then alluded to is not now in the possession of Mr. Batson, and I have been quite unable to obtain any further clew to it, and therefore cannot say whether my information was correct or not. I have, however, the pleasure, through the kindness of Mr. F. Bond and Mr. H. T. Allis, of making known the occurrence of two specimens of this bird in the north of England; and I cannot do so better than by letting the latter gentleman tell the story in his own way, in a letter to Mr. Bond, of which the following is a copy:—

"York, November 26, 1851.

"My dear Sir,

"On Friday last I called on Mr. Heaviside, of Great Ayton, to inquire about the American waxwing. He informs me that the two that he stuffed were shot at Stockton-on-Tees, both in the same locality, but on following days; he cannot give me the exact

date, but it was in the early part of 1850. They were feeding on haws at the back of Lady Barker's house; several specimens of *Bombycilla garrula* were obtained in the same district (within a few miles), but the two species were not observed in company. I saw the birds after they were stuffed, at the house of Mr. H. * * *

"I am, dear Sir,

"Yours most truly,

"THOMAS H. ALLIS."

"Fred. Bond, Esq.,

"Kingsbury."

I hear from Mr. Bond that Mr. Heaviside, shortly after Mr. Allis saw the birds, sold them to a gentleman whose name I have been unable to learn, and I have no further information to give on the subject, as Mr. Heaviside has not replied to a letter which I wrote to him, making additional inquiries respecting the fate of the specimens; possibly he is unacquainted with the purchaser of them. In the absence therefore of these desirable particulars, I proceed to quote from the accounts of this bird given by American naturalists; and of these, that afforded by Mr. Nuttall in his 'Manual of Ornithology' appears to be the most compendious, as it has the advantage of being the most recent, and of having profited by those of others. It may be as well at first to remark that Wilson seems to have been altogether on bad terms with this bird, as he accuses it in violent language with the crimes of being mute, gluttonous, and devoid of parental affection: Audubon, in its defence, admits the first charge, such as it is, extenuates the second by urging the temptation it is exposed to by the abundance of the succulent berries and fruits of the American forests and orchards, and also by enlarging feelingly on the goodly dish itself affords after fattening on such food, and, on the authority of a correspondent, totally and successfully denies the third.

The evidence that I have collected, in a condensed form amounts to this:—That southward of the fortieth parallel of latitude, which passes, among others, through the States of New Jersey, Pennsylvania, Ohio and Missouri, and south of the valley of the river Platte, the cedar birds are resident during the whole year; north of this boundary they appear only as summer visitants, extending their range over the whole continent east of the Rocky Mountains, as far as the south branch of the Saskatchewan, the Winnipique, and the northern shores of Lakes Superior and Huron, although never penetrating into Labrador or Newfoundland. The southern limits of their summer range

are not given by any of the naturalists to whose works I have had access; but in autumn, uniting in large bands, they press towards the tropical regions of the continent, so that winter finds them inhabiting the southern States of the Union, or at times passing their Christmas among the plantations of Jamaica, or the dense forests of Cayenne, which verge on the confines of the equator. So much for the geographical distribution of these birds, whose periodical movements appear to be influenced more by the supply of food, than by the variation of the temperature, though this last reason may often be the prime cause of the first. They are almost entirely frugivorous, the exception being during the breeding-season, when they are stated to make full compensation for the portion of the fruit-crop they destroy, by the havoc they cause among the larvæ, which would be more injurious to it. In their playful and social habits they are said to resemble ravens or red-polls, preening each other's feathers, and feeding one another with a highly desirable degree of Platonic affection, entirely independent of sex or season. In the winter they appear to be shy and restless, but in the summer they rather affect human society, and breed usually in orchards and gardens. Towards the end of May or the beginning of June, having paired, they begin the work of nest-building, choosing indifferently cherry, apple, hemlock, or cedar trees for their locations, and at the height of from six to eighteen feet constructing their habitations of "dry coarse grass, interwoven roughly with a considerable quantity of dead hemlock sprigs, further connected by a small quantity of silk-weed* lint, and lined with a few strips of thin grape-vine bark, and dry leaves of the silver fir," but at other times using "fine root-fibres" as an inner lining. Of whatever materials the nest may be constructed, vegetable down or "lint" always appears to enter as a component part. At Cambridge, Massachusetts, Mr. Nuttall has known two eggs in a nest on the 4th of June, and a brood of young in the nest on the 7th of September. The period of incubation is stated to be fifteen or sixteen days. Audubon says that they lay four eggs, "of a purplish white, marked with black spots, which are larger towards the great end;" the length of the egg being "9-twelfths, its breadth 7-twelfths" of an inch: Wilson states that "the eggs are three or four, of a dingy bluish white, thick at the great end, tapering suddenly, and becoming very narrow at the other; marked with small roundish spots of black of various sizes and shades; and the great end is of a pale dull purplish tinge, marked likewise with touches of vari-

* *Asclepias*, sp.

ous shades of purple and black." Nuttall does not appear to have met with any specimens exhibiting the peculiarity of form noticed by Wilson, but it is very apparent in one I possess, which I obtained from Mr. A. D. Bartlett, of Camden Town, and which, in other respects as well, closely corresponds with the descriptions of Audubon and Wilson.

The vegetable food of this bird appears to consist of berries of every description, from those of the red cedar (*Juniperus Virginiana*, Willd.) and cherry, whence it derives its commonest names, to those of the sour-gum, pride of China, wax-myrtle, persimon, and, when they visit the West Indies, the cashew.

It may be as well to give here the names of this species, as used by the various authors whose works I have consulted; I therefore subjoin a list, giving the synonymes of the bird, and the dates to which they can be referred.

- 1754. The Chatterer, *Le Jaseur de la Caroline*, Catesby, Nat. Hist. Carol. i. 46, pl.
- 1758. The Chatterer of Carolina, *Le Jaseur de la Caroline*, Edw. Gl. Nat. Hist. 66, pl. 242.
- 1760. Le Jaseur de la Caroline, *Bombycilla Carolinensis*, Brisson, Ornith. ii. 337.
- 1788. *Ampelis garrulus*, β ., Linn. Syst. Nat. (Gmel.) ii. 838.
- 1807. *Bombycilla cedrorum*, *Le Jaseur du Cèdre*, Vieill. Ois. de l'Am. Sept. i. 88, pl. 57.
- 1808. Cedar Bird, *Ampelis Americana*, Wils. Am. Ornith. i. 107, pl. vii. 1.
- 1831. Cedar Bird, *Bombycilla Americana*, Swains. Faun. Bor.-Am. ii. 239.
- 1831-9. The Cedar Bird, *Bombycilla Carolinensis*, Audub. Ornith. Biog. i. 227; v. 494. B. of Am. pl. 43.
- 1838. *Bombycilla Carolinensis*, Bonap. Comp. List of B. 9.
- 1840. Cedar Bird or Cherry Bird, Nutt. Man. of Ornith. Land B. ed. 2, 274; Water B. App. 580.
- 1847. Cedar Bird, *Ampelis Carolinensis*, Gosse, B. of Jamaica, 197.
- 1849. *Ampelis cedrorum*, G. R. Gray, Gen. of B. i. 278.

Of the coloured figures of the bird to which I have given reference, that of Audubon alone presents a correct idea of this beautiful species. In some of the New England States it is known by the name of "Canada Robin," while the Canadians term it "Recollet."

The following is Nuttall's description of *Ampelis Carolinensis* : —

"The length of our bird varies from $7\frac{1}{2}$ to full 8 inches, so that at times it arrives at the full size of the European species. Head, neck, breast, back, and wing-coverts of a brownish gray; becoming darker on the back, and brightest on the front and elevated crest. A deep black line from the nostril over the eye to the hind-head, bordered above by a slender line of white; another line of the same colour passing from the lower mandible. The chin black, gradually brightening into grayish brown. The belly yellow; vent white; wings dusky gray. Rump and tail-coverts dark ash-colour; tail of the same colour deepening into dusky, and broadly tipped with yellow. Six or seven, and sometimes the whole nine secondaries of the wings curiously ornamented with small vermilion oblong appendages, resembling sealing-wax, which are a prolongation of the shafts; occasionally these processes also terminate some of the tail-feathers. Many of these birds are destitute of these singular ornaments, which answer no economical purpose whatever to the individual. The bill, legs, and claws are black. Iris blood red. In the female the tints are duller." In some individuals the "sealing-wax" appears in the nestling plumage.

There are two facts which should not be overlooked in noticing the occurrence of this bird in England for the first time: — First, that the individuals whose capture I have above recorded, were met with in winter, at which season they should have been occupying a district at least fourteen degrees further south; but isothermal lines are surer guides in determining the range of species than parallels of latitude, and if in this case they be so considered, the birds were not far wrong. Secondly, that the time of their capture coincided with that of the great immigration of the European waxwing into England, (Zool. for 1850, *passim*). It was then ably shown by the Editor (Id. Pref. x.), that the last-mentioned species migrated from *east* to *west*; but in the case of the cedar bird, as it is only found within the limits I have above traced, the direction of its migration must have been exactly opposite to that of the former. Whether satisfactory reasons can ever be assigned for this strange contradiction in the manners and customs of two birds, which would otherwise be deemed to be closely resembling each other,* may be doubted, but at all events no harm can

* So much alike are the two forms in outward appearance, that although the declaration of the independence of the American species was made at least as early as Catesby's time, it was not recognized as distinct by all European naturalists, until their favourite was found by Mr. Drummond, in 1826, at Great Bear Lake, unaltered in size or plumage. The yellow under surface of the transatlantic bird is a sure mark of distinction between them.

result from calling it to the notice of naturalists. I do not anticipate, however, that the habits of our common species, when they shall have been ascertained, will be found to differ much from those of the American form, more especially since, as far as could be determined, those of the red-winged species* of Japan do not; and I have been thus diffuse on the subject of the American bird, in consequence of the lamentable blank left in our books of Natural History by our ignorance of those of *Ampelis garrulus*. I only trust that in compiling so much from other authors, I have not blindly copied from them, so as to fall under the condemnation of Sir Hamon L'Estrange, who says that "Naturalists follow one another as wilde geese flye."

ALFRED NEWTON.

Elvedon Hall, June 4, 1852.

Note on the proper Name of the "Sylvia turdoides." — Allow me to make a few remarks on the two notices of the occurrence of this bird in England, which have appeared in your pages, (Zool. 1876 and 3476). The English name given to it in these two cases is not, I think, that by which it has been usually described. The bird is the "Reed Thrush" of Latham's 'Synopsis' (iii. 32), and of the British Museum 'Catalogue' (App.), and the "Great Sedge Warbler" of Gould's 'Birds of Europe.' It appears to me, therefore, that it would be better at once to discard the name of "Thrush Nightingale," which might be more properly applied, if this has not already been done, to the *Sylvia Philomela* (the large nightingale of southern and eastern Europe), in order to resume one of the older names. The law of priority in nomenclature is also entirely set at nought in speaking of this bird as *Sylvia turdoides*; for according to the British Museum 'Catalogue,' it is the *Motacilla arundinacea* of Linnaeus's 'Systema Naturæ,' it has therefore a claim to that specific name, prior to our own reed warbler discovered by Mr. Lightfoot; and this claim is recognized by Mr. G. B. Gray in the admirable Catalogue just mentioned, since this last bird has there the specific name *strepera* applied to it, which, it appears, was originally given by Vieillot. May I also beg the present possessors of the supposed eggs of *Sylvia turdoides*, alluded to by Mr. Hancock (Zool. 1876) as having been found in Northamptonshire, to insert a description of them in the 'Zoologist'? — Alfred Newton; Elvedon Hall, Thetford, June 4, 1852.

Note on the Common Red-poll, (Linota linaria). — This bird, according to my experience, is at all times a rare species in Suffolk; a record of its nesting in my orchard may therefore be sufficiently interesting to merit a place in the 'Zoologist.' Seven or eight years ago I saw a pair of them in my grounds, but I had not met with them since until about a week ago, when I was much pleased to see them flitting about the apple-trees in my orchard, and paying most particular attention to the buds of the

* Le Jaseur Phœnicoptère, *Bombycilla phanicoptera*, Siebold, Faun. Jap. 84, pl. 44.

same. During the time I watched them, they seemed to investigate almost every bud of a large Hawthornden, in which I found them. As I am foolish enough to prefer my birds to my fruit, I did not even drive them away, much less shoot them. This morning I found the nest on the branch of a pear-tree. The female was sitting upon four eggs, and it was most pleasing to witness her anxiety and constant near approach while I was examining the same. The nest was made of roots, hay, and a good deal of wool, and lined with horse-hair, wool, and dandelion seeds. It was exactly two inches in diameter. The catkins of the willow, stated by Yarrell to be a constant lining, were absent.—*C. R. Bree; Stowmarket, May, 1852.*

Note on the Habits of the Hoopoe.—I send you a few remarks on the habits of the hoopoe, several of which birds have occurred near Deal during the last month. I saw one on the 6th, and two on the 24th; one of these I shot, and the other was shot by a friend. On the 26th, two were seen on some rising land three miles from here, and another occurred at Canterbury. The three I saw were in the sand-hills, a dry, sandy, hilly slip of land, flanked by the sea on one side, on the other side by marshes extending from Sandown Castle to the mouth of the river Stour, and covered chiefly with tufts of long coarse grass. For many weeks the wind had been east and north-east; and coming home through the sand-hills on the 6th of April, I saw a hoopoe, which, crossing the hills from the sea, passed over a hedge into a bean-field. Its actions were quick; it ran very swiftly for short distances, then pecked the ground, raised its crest and ran again. It flew for about seventy yards close to the ground, with a very buoyant flight, and rather slowly, but when flushed its flight was rather lofty and well sustained. On the 23rd I saw another, about a quarter of a mile from the same spot where I saw the first. The white rump is very conspicuous when the bird is on the wing. On the 24th, very early in the morning, I shot this bird; it was only winged, and when I picked it up it bristled up like a game cock, but this was all show, no actual resistance. In a few minutes I found another, which I did not shoot, but it was obtained by a friend a few hours afterwards. Both birds were females; none of the ova were larger than a mustard-seed: the gizzards contained several caterpillars and small beetles. Within a few years five others have occurred here, besides several reports not so worthy of implicit reliance.—*J. W. Hulke; May 27, 1852.*

Arrival of Hirundines in 1852.—In spite of the cold backward spring, and the bleak north-east winds which have been so prevalent this season, some of the Hirundines made their appearance rather unusually early, at least for this part of the country. I saw two (I believe they were sand-martins) flying about over the lake at Coombe Abbey, on March 30; and the keeper, who was with me at the time, assured me he had seen three swallows (as he called them, which, however, I conclude to have been sand-martins) on the 19th of that month, an earlier date than I ever myself observed them. Two swallows (*Hirundo rustica*) were flying about near Shrewly Pool, in the parish of Hatton, on the 1st of April, which is an earlier appearance of that species than I have ever before recorded. A numerous flight of Hirundines appeared on the 15th of April, over the Tame, near Hams Hall: these were principally sand-martins. If the sand-martins and swallows made their appearance earlier than usual this year, the swifts were equally late; the weather at the end of April and beginning of May was very favourable, yet I could not see a single swift till the 13th of May, although I was daily on the look out for them.—*W. T. Bree; Allesley Rectory, May 24, 1852.*

Anecdote of the House Martin, (Hirundo urbica).—From the erection of the present manse in 1830, from two to four pairs of this bird had been in the habit of build-

ing their nests and hatching their young, as regularly as the season came round. In the summer of 1840, a nest, placed under the lintel of one of the windows, became detached from the stone by the action of a battering rain, and fell upon the sill, parting into several pieces, which proved to be occupied by an unfledged family of five members, apparently a few days old. One of them had been dashed out in the fall, precipitated to the ground, and killed; while the others lay exposed in the nest, and at the mercy of the storm. The distress of the parents was seen to be very great, and the expressions of sympathy and commiseration on the part of their neighbours, equally unmistakeable. At this stage, the observant eye of the gentle lady of the manse fortunately fell upon the scene, and her feeling heart prompted to deliverance. She accordingly thought of procuring a flower-pot, and by careful manipulation succeeded in very nicely depositing within it the shattered habitation, together with its helpless tiny occupants, in perfect safety. A piece of cord was then put round the flower-pot, and the cord having been taken over the upper sash of the window and fixed to a nail within, the whole was suspended as nearly as possible in the position the nest had originally occupied. The martins acknowledged their acceptance of the service, by immediately setting to work and building up the open space that intervened between the flower-pot and the stone, leaving the accustomed portal; and this somewhat singular tenement having served as a nursery until the youngsters were able to fight their way in the world, was soon after taken down by the same kind hand which had aided in its construction. But what was the surprise of the lawful occupants of the manse, when, next season, their old friends arrived, not in two or three decent manageable pairs, or at most with their latest born progeny, but accompanied, as was presumed, by the grandfathers and grandmothers, cousins and half cousins, and all other sorts of relations, whether by consanguinity or conventional alliance, amounting to a most formidable colony, which so beset our clerical residence that they literally encircled the walls with an unbroken chain of rough bumpy-looking pottery;—proceeded so to fill the air and occupy our pleasure-ground that the purity of neither plant nor garment could be preserved;—and so annoyed us with their friendly colloquies, to say nothing of certain more vociferous expressions, whether of fury or of mirth, that at last a writ of ejectment came to be called for, as a necessary measure of self-defence. On its effects being manifested in the demolition of the nests, the whole colony speedily betook themselves to flight; and for years, not so much as a solitary visitor ventured to show himself among us. Last year, however, we were patronised by the presence of four heads of families, and a single pair are at present busily engaged in the process of nidification. Will these details warrant the conclusion that our lively and well known friend, the martin, can appreciate kindness, deduce something like rational inference from a definite act, and communicate his ideas to his brother beings?—*George Harris; Manse of Gamrie, May 24, 1852.*

Notes on the Habits of the Shanny (Blennius pholis). — A specimen of the shanny or smooth shan has been in my possession for more than half a year, and being about to restore him to his native ocean previously to my leaving the Island, I pen a short account of his ways and doings observed during that period. He was captured with the aid of a tin gentle-box, in one of the pools left among the rocks on this coast. That his stature is not imposing may be judged from the above circumstance, and

from the fact that during the whole of the above-named period he resided in a glass tumbler, with about three quarters of an inch of sea-water. His appetite is most accommodating—spiders, Scolopendræ, caterpillars, small insects and Mollusca, in short, anything that moves, being acceptable; but more generally he shared in my luncheon, whether the same were roast beef, boiled mutton, fowl, or chop. His action when hungry is very significant; on my approaching the tumbler he comes to the same side, looking up eagerly at me, and jumping up repeatedly in the water, apparently to attract attention. Whatever is thrown in is seized with avidity, commonly by the middle, and thus sticking across the mouth is often let go and seized again three or four times before it happens to be in a position to be swallowed: this is only when the substance is rigid; a *Scolopendra electrica*, nearly an inch in length, which is more than half his own dimensions, disappeared in a trice. If an insect is placed outside the tumbler, it is amusing to see his vigorous struggles to penetrate the walls of his crystal prison and get at it. When a mouthful proves rather too large, he shakes his head violently and backs astern, as though that materially assisted the process. The colouring is very variable, he being at one time covered with dark blotches and markings, and at another almost immaculate. The dark colour is always assumed when the water is changed, from which I imagined it was owing to a larger supply of oxygen; I think now, however, it may be from alarm, as disturbing the fish without renewing the water appears to deepen the colour. The mouth is invariably open, except of course in the act of swallowing, differing in that respect from any fish that I have observed (I can only speak of gold-fish, roach, dace, and other fresh-water species), all of which close the mouth at each inspiration. The shanny is said to creep into holes when left by the tide; and this specimen, when placed on a table covered with a cloth, does not fall sideways like many fish, but supported on the abdomen by the large pectoral fins, it advances by lashing the tail from side to side, gaining perhaps half an inch at a stroke; from the peculiar structure and position of the ventral fins any motion must be *ahead*. The eyes have great freedom of action, and move independently. He is sufficiently tame to take food presented to him on the point of a setting-needle, but usually retreats when the hand is brought near to the side of the glass. Mr. Yarrell (if I remember rightly) states that this species seldom exceeds 4 inches in length; as mine is but an inch and a half, I conclude it to be a young specimen: it has however grown little if at all while in my possession. — *George Guyon; Ventnor, Isle of Wight, June 18, 1852.*

Note on Porcellana platycheles. — I find in Professor Bell's 'British Crustacea' a remark on the force with which *Porcellana platycheles* can use its claws, and its readiness in parting with its limbs. Both these attributes were exemplified in a specimen I captured here a few months ago (in fact on the same day that I met with the shanny just spoken of), the force of whose nippers certainly surprised me, considering the size of the creature. It also grasped the edge of the tin gentle-box-lid so firmly, that I raised it thereby to drop it into the box, when, rather than let go its hold, it separated from the limb at its base. I think this instance is somewhat remarkable, inasmuch as the crab was merely detained by its own voluntary grasp, and parted with its limb in preference to letting go its hold. — *Geo. Guyon; Ventnor, Isle of Wight, June 18, 1852.*

Note on a Whelk.—A whelk taken at the same time as the shanny has been kept in the same glass of sea-water. At first it was bare, but after a month or two it became coated with a green velvety deposit, from which, in course of time, numerous filaments of sea-weed have sprouted. These have grown rapidly, and many of them are now full two inches long. I do not know the species (though probably common), but intend to preserve some for identification. The mollusk is still living; at first it was perpetually climbing up the glass, but now only does so at long and uncertain intervals.—George Guyon; Ventnor, Isle of Wight, June 18, 1852.

A Night in the Forest. By NICHOLAS COOKE, Esq.

“MAN cannot stand beneath a loftier dome
 Than this cerulean canopy of light,
 The Eternal's vast, immeasurable home,
 Lovely by day, and wonderful by night;
 Than this enamelled floor so greenly bright
 A richer pavement man hath never trod,
 He cannot gaze upon a holier sight,
 Than fleeting cloud, fresh wave and fruitful sod,
 Leaves of that boundless book writ by the hand of God!”

On the edge of Delamere Forest is a park belonging to Lord Delamere, which is one of the few spots in this neighbourhood that is not tabooed. In it there is a lovely sheet of water, called Petty Pool, which is bordered on one side by a glorious wood, rising to a considerable height by a steep slope above the lake, and composed of alder, beech, birch, and oak timber, backed by a forest of noble pines; and in the distance are seen some of the Derbyshire hills, altogether forming a most beautiful picture. It is a charming locality for a naturalist, as here are found many rarities, not only entomological, but ornithological and botanical too. To this wood my friend, Mr. Noah Greening, and myself repaired one afternoon in the early part of the delightful month just past, with a female *Notodonta trepida*, which I had bred from an egg found on a tree in this wood during the previous spring; hoping, by staying out all night, and by her means, to capture some males of this rare species. We took our fishing-tackle with us and fished for two or three hours, but with my usual luck in that line, for the fishes would not be caught. I never met with the angler yet, who, more than two or three times in his life, knew fish to bite freely; and I have sat by the water-side many a time from 3 A.M. to 7 P.M., without having more than a glorious nibble. We did, however, this time catch two bream, of about a pound weight each.

Before dark I was fortunate enough to find a fine pair of *N. trepida*

in copula. When it became dark, the night-jar set up his whirring note; we then lighted our lamps, and about 10 o'clock my female trepida began to call. In less than half an hour, as Mr. G. was examining a specimen of *Coremia unidentaria*, or some such rubbish, that he had got in his net, I sang out,—"Here comes trepida!" I could see it coming several yards off, by the light of my lamp, in a straight line towards the female I had in a cage held in my hand. A stroke of my net, and I had captured the finest male I ever saw. "Hip! Hip! Hurrah for trepida!" shouted we, in a very excited state, and expected we were going to take at least fifty more; but in about an hour, as none came, we cooled down, and lay down on the dry leaves to smoke. Several species came to our lamps during the night, such as *Odontopera bidentaria*, *Tephrosia crepuscularia*, *Harpalyce suffumaria*, *Lozogramma petraria*, *Trachea piniperda*, &c. We were lying about half asleep, near 12 o'clock, when Mr. G. shouted out "Here's another trepida!" I rose up in a great hurry to a sitting posture, and saw one dart past me towards the female, and then back close past my face to the ground. I thought there were two, and told Mr. G. so as I clapped my net over this one; however, as we could not find another, we were obliged to be content with securing one.

About an hour after this it began to rain, so we went into a hut near the water, kindled a fire upon the floor with dead brackens and fir-twigs, and proceeded to cook our fish. It would have been a fine subject for a painter:—me on my hands and knees blowing the fire, which filled the hut with smoke almost to suffocation, and Mr. G. holding the fish on a forked stick over the flame, until it was roasted to a nicety; and notwithstanding our rude way of cooking, we thought the fish excellent, as we ate them in our fingers after peeling them like onions, their skins being as black as coal.

Bats were flying about all night, and we tried to catch them by pinning a moth to the end of a string suspended from a bough of a tree, but they were not to be caught in that way. At about 2 o'clock the cuckoo began to call; then the sedge-warbler, skylark, black-cap, blackbird, thrush, willow-wren, wood-wren, chiff-chaff, &c.; and every now and then were heard the wild cries of the heron, coot, and crested grebe. When the day began to dawn we went to our rods again, which we had left baited, and found two of the lines fast amongst the tangled roots of the reeds. I stripped and went in to loose them; one line had a fine eel on the hook, but from the other the hook had been twisted off, and the line itself tangled into such a mess as nothing but an eel can make.

We tried fishing again, but after waiting an hour or so without even a nibble, I said I could stand it no longer, and would go and look for some *Tephrosia punctularia*. I soon took forty specimens, besides *Tephrosia crepuscularia*, *Bapta temeraria*, *Ephyra punctaria*, &c. On leaving the ground we divided the catch. Mr. G. and I always join in what we take when out collecting together, and toss for the first pick; in this instance Mr. G. won the toss, and of course the splendid male *trepida* is in his cabinet.

We breakfasted at the Blue-cap inn, near the park gate, (Blue-cap was a noted hound belonging to the Cheshire hunt, and not far from the inn is a monumental erection to his memory); coffee excellent, as well as ham and eggs, and a spoon would almost stand upright in the cream. After enjoying a cigar we walked to the railway-station at Hartford, well pleased with our trip, and as happy as true lovers of Nature only know how to be, intending to try it again next year, if all be well, in spite of sundry most unearthly noises heard by us in the dead of night, as we lay listening to the "roar of the wind through a forest of pines."

NICHOLAS COOKE.

Penketh, near Warrington, June 12, 1862.

Entomological Localities. By J. W. DOUGLAS, Esq.

(Continued from page 3432).

LONDON.

"Oh! well may poets make a fuss
In summer time, and sigh '*O'rus* !'
Of London pleasures sick :
My heart is all at pant to rest
In greenwood shades—my eyes detest
This endless meal of brick."

Thomas Hood.

"The world is too much with us ; late and soon,
Getting and spending, we lay waste our powers :
Little we see in Nature that is ours ;
We have given our hearts away, a sordid boon !
The sea that bares her bosom to the moon,
The winds that will be howling at all hours,
And are up-gathered now like sleeping flowers ;
For this, for everything, we are out of tune ;
It moves us not."

Wordsworth.

London considered as an "entomological locality" may excite a smile; but I have no intention to allude to the insect pests popularly known as "flats" and "sharps," which abound in every portion of the metropolis from Whitechapel to Regent's Park: though, by the way, it would be no slight boon to the Londoners if they could be taught how to get rid of these companions. My purpose at present is to call attention to the entomological museums of London,—more especially those of the British Museum and the East India House,—with a view of making them, if possible, more generally useful. A museum of preserved insects bears the same kind of relation to Entomology that books do to knowledge; and though not to be put in the place of direct observation of living specimens, any more than books should supersede individual thought, yet as an accumulation of the results of investigation, and in a vast number of instances the dead specimen being all that is known of a species, it is a highly important institution. The founders, and more particularly the upholders of these collections, no doubt know, to some extent, their benefit to science; but are they so useful as they might be? The student can easily obtain access to them, but what endeavours are made to increase the number of learners? Without a previous knowledge of Entomology, the view of such collections as these can be but little better than a show. And when it is considered how few persons have this knowledge, simply, as I believe, in thousands of instances, because their attention has never been called to the subject; and further, how much time and talent are wasted by our young men,—aye, and women too,—it is surely worth the attempt to stir up our leading men to the importance of making Entomology one of the means of carrying out a principle, the soundness of which they generally recognize,—the amusement and instruction of the people in their leisure. Let our schools supply the requisite preliminary instruction, and our youth will acquire a taste for investigation into the nature and economy, not only of insects, but of animals generally and plants, and consequently have an occupation that would not only tend to withdraw them from low and sensual pleasures, but render them capable of appreciating and using the stores of materials contained in our Museums. Great bodies are slow to move, and it is always heretical to apply a lever; but I would nevertheless beg to ask whether, even in the present unprepared state of the many, it would not be advisable to appoint a Professor of Entomology at the British Museum, who should give courses of lectures on the science, which lectures should be free to all? Such a measure would be particularly useful, and, I believe, attrac-

tive; to the large body of persons who have neither time nor means to go beyond the limits of the town, and have no inducement from Natural History to come out from themselves and their employments, during their brief intervals of business. The hour is propitious, and there would not be much difficulty in finding the man.

I mention Entomology in particular, partly from having myself a prepossession in its favour, and partly because insects are so easy to procure; but if an entomological course of lectures were successful, other branches of Zoology might follow. The great thing to be done is to make an inroad upon the vast realm of Do-nothing — to awaken and direct a taste for observing and reflecting upon the natural objects around, to show the beauty of common things, and lead men, who now at most see but the beauty of utility, to feel the utility of beauty. This is one of the many paths which the growing intelligence of the people requires should be opened: My Lords and Gentlemen, *it must be done!* — and why not by you? Could not our young nobles at Oxford and Cambridge learn something of Natural History, and fit themselves for appreciating the wonders that their means and opportunities put so specially within their reach, to the benefit not only of themselves but of the numberless persons influenced by their example? Could not our young clergy make themselves acquainted with the laws that govern the existence and distribution of the infinite number of dependants on that Great Power whose special servants they profess to be? When afterwards settled down among a rural population, would not their knowledge be most beneficial in directing the rude Natural-History instincts of the lads of the village, from whom now and then they might perhaps eliminate a Linnæus, a Cuvier, a Latreille, or some milder luminary? At least, they might put every cottager in the kingdom in the way of keeping bees, and adding by their produce to his material comforts. Might not the sons of our merchant princes be taught how in their dealings with the ends of the earth they could enrich the collections of the nation, and add to the scientific knowledge of the world? Finally, might not our gentry cause every school in the country to have its Natural History Class, and every village its Natural History Club? I am sure all these things are possible to be accomplished, and only want to be begun to succeed, to the great benefit of science, of the state, and of individuals, and with one other incidental result — that of making London more than ever an Entomological Locality. J. W. DOUGLAS.

6, Kingswood Place, Lee, June 9, 1852.

Further Continuation of the Bee-buzz.—I was much pleased with Dr. Bevan's letter in your last number, (Zool. 3497). He is quite right as to the *locus in quo*, in Park Street, Bristol;—it was at the house of my friend, Mr. J. B. Estlin, where I first saw the unicomb hive. I lately read in your journal for 1850 (Zool. 2960) an account of the Rev. Mr. Ridsdale having witnessed the connexion of the queen bee with a drone; but it seems strange that the Reverend gentleman did not promulgate what he saw until forty-six years afterwards; and the fault he appears to have committed consists in not having afterwards examined the unfortunate drone which fell to the ground, and sent an account of the appearances to some scientific body or person well versed in Natural History. The drones in their flight ascend about 200 feet in fine weather; hence the difficulty in observing anything done in the air. Huber, in his experiments with queens, in order to render their vision less acute, bedaubed their eyes with opaque varnish, but even this did not prevent their ascending into the air to too great a height for observation. Huber's account of his experiments is extremely interesting, but I cannot say that I agree with him about the "regular fortifications against moths;" on this subject I say, "tell that to the marines," the old "sailors know better." Bees regularly fill up all air-holes in their hives, thus knocking down many of the arguments about ventilation; they will even fill up all the holes in the tin sliders, and make pillars of propolis at different vacant places, to prevent the ingress of all sorts of insects and vermin; but I quite agree with Huish that Huber has stated too much, and I am given to understand that in Germany this part of his work is not believed. But a man who has discovered so much may well be forgiven for giving more than the whole truth, like many travellers who have done the same thing. Huber also states that hive bees attack the nests of humble bees, another remark that I am sure is incorrect: at the same time I am happy to infer that this mistake may have arisen from his having taken some humble bees' nests containing honey, and leaving them exposed in his own garden; for it is an absurdity to suppose that hive bees would go a foot into the earth after the honey of wild bees, or even penetrate a thick layer of moss to do so. I have myself been a searcher after their nests for these fifty years, and watched them in all situations, and am certain that it is an error, probably from the cause I have mentioned. I cannot conclude without thanking my worthy and venerable brother apiarian, Dr. Bevan, for his "wrinkle" about keeping the bees in the unicomb hive through the winter. I will only say, may God spare him for some years longer! I hope he may live to see all the railroads in his neighbourhood finished; and should he change his residence once more, may he get above "flood-mark!" Had I been near enough, I should have been most happy to send him a couple of stocks to replace some of those which the floods swept off, — *H. W. Newman; New House, Stroud, June 7, 1852.*

Wasps and Humble Bees.—These have been numerous; I have killed upwards of fifty queen wasps in April and May. The late showery weather and the cold nights have been very unfavourable to the wild bees; I have picked up a great many dead ones under the chestnut-trees, and probably the wasps will suffer also.—*Id.*

"*Another Buzz from the Bees*" continued.—I owe Mr. Newman many thanks for the kind offer of his unicomb hive by way of loan, as a pattern for the construction of a similar one by my carpenter. At present, however, I am not in a position to set up a hive of this kind, but I shall bear his offer in mind. Touching the impregnation of the queen bee, I have by me a work entitled "The Natural History of Bees," translated from the French, and published in London in 1744, from which it appears that

ocular demonstration has at least *once* been obtained of the "coitus apum," that is, if the author is to be credited. He writes anonymously, in the form of a dialogue between two imaginary personages, Clarissa and Eugenio; and though "almost all his facts are borrowed from M. de Réaumur, whose expressions he often copies" (says the Preface), "'tis still Eugenio (*i. e.*, the author) who is accountable for the use he makes of them." Not to shock ears polite, I do not quote the whole of the actual words (the author was a Frenchman!), but merely give the substance of them. Eugenio tells Clarissa that a queen was brought to him on one occasion: as a supernumerary she appears to have accompanied a swarm the evening before, but to have either been rejected by the bees, or to have attempted to return home, but having missed her way, she had dropped on the ground near the hive, where she was found. "The good condition of the wings, and her colour, made me conclude" (says the author) "that she was yet young; and the bulk of her body, not so great as that of a female ready to lay, seemed to prove that she had no other eggs but such as were extremely small. I shut her up in a glass, where I put likewise a male with her." This male at first, he says, took no notice of the queen, though she was unsparing of her caresses of him. These endearments on the part of the queen were, however, successful at last. Intercourse took place several times during the space of three or four hours, at the end of which time the drone died, as it were in an interval of repose; but his body remained all that day attached to the queen, who took no notice of another drone, which was put under the glass at the same time. Both drones were taken away at night, and a fresh drone given to the same queen next morning, as well as a drone to another queen, which had been brought to the author to repeat the experiment. "The two females," continues the author, "behaved in the same manner in which the first had done the day before, with a male in perfect health." Now this account, up to a certain point, tallies as nearly as possible with Wildman's story of Réaumur's experiment, somewhat similar in kind, (see Wildman, 3rd ed., 1778, pp. 69, 70). Is it a mere embellishment of Réaumur's facts, or is the whole story a detail of personal observation? — that is the question. But the author writes as a man who had seen with his own eyes. Huber, who came after the author of 'The Natural History of Bees,' informs Bonnet, in the first of his celebrated letters, that he had seen passages of love, similar to those which Réaumur saw between queens and drones, and in fact believed he had witnessed a kind of union between them in the hive, but so short and imperfect that it was unlikely to effect impregnation; neither did they produce it, as he satisfactorily proved, for these queens laid no eggs. But for Huber's other experiments, and their unmistakable results, in proof that queens seek intercourse with the drones in the open air, I should not have been disposed to reject the theory of intercourse at home, from the circumstance that he did not succeed in obtaining a queen so impregnated. There are so many contingencies to be met in experiments with bees, that it is no single observation, however correct in itself, that will suffice to establish a fact. However, to cut the matter short, I must say that, equally with Mr. Newman, I unhesitatingly assent to his conclusions. Reverting once more to the subject of "light in the dwelling," whether tolerated or not by bees, I may mention that I put a small swarm into a straw hive, with a pane of glass at the back, on the 31st of May. Though this pane is uncovered, I do not find the bees in the least annoyed by the light constantly pervading the hive by day; nor have they yet smeared it over, or attempted to do so. The critical time however will be when the comb is worked up to the glass, which it

is not yet. I should mention that the glass is considerably shaded by a tall hedge at the back of the hive, only two feet removed from it. — P. V. M. Filleul; * Ross, Herefordshire, June 8, 1852.

Proceedings of the Entomological Society.

June 7, 1852.—J. O. WESTWOOD, Esq., President, in the chair.

The following donations were announced, and thanks ordered to be given to the donors: — 'A List of the Specimens of British Animals in the Collection of the British Museum. — Lepidoptera (continued). 1852.' By J. F. Stephens, Esq., F.L.S.; presented by the Author. 'Statuten und Namen des Mitglieder des Münchener Vereins für Naturkunde.' 'Isis,' Nos. 1, 2, 4, and 6, 1860. 'Systema Insectorum,' tom. i. Coleoptera, Fasc. 1, Mantichora—Dromica: Monachii, 1837, auctore Dr. J. Gistl. All presented by Dr. Gistl. 'Transactions of the Zoological Society of London,' Vol. iv. part 2, 1852; by the Society. A Portrait of Signor Passerini, Hon. M.E.S.; by the Rev. F. W. Hope. 'The Zoologist' for June; by the Editor. 'The Literary Gazette' for May; by the Publishers. A specimen in the finest condition of *Morpho Cytheris*; by T. J. Stevens, Esq., Bogotà.

Capt. T. Hamilton, of the Indian Army, was elected a Member of the Society.

Mr. Adam White mentioned that a specimen of *Acherontia Atropos* had been captured at Bressay, one of the Shetland Islands, by Miss Mouatt, of that place, the first instance known of the occurrence of the species so far north in Britain.

Mr. A. F. Sheppard exhibited a remarkably fine specimen of *Notodonta Carmelita*, taken by Mr. Harrison, of Keswick, on a birch tree near that place; also, on behalf of Mr. N. Cooke, of Warrington, a specimen of *Notodonta trepida*, reared with others from eggs found in May, 1851, upon a beech tree in Petty Pool Wood, Delamere Forest: the larvæ fed on oak-leaves. Mr. Sheppard also exhibited some specimens of *Cemiostoma Laburnella*, which he had beaten out of ivy, remarking that he could get none from the laburnums, although there were several of those trees in his garden.

Mr. Hunter exhibited a specimen of *Notodonta Carmelita*, which he bred on the 8th of May, from a larva beaten out of an oak at Black Park last year.

Mr. Waring exhibited two specimens of *Retinia Turionella*, one of which he had reared from a shoot of Scotch fir from West Wickham Wood: also a specimen of *Antithesia prælongana*, from the same locality.

Mr. Edwin Shepherd exhibited two specimens of *Trochilium Culiciforme*, reared from larvæ found in a stump of birch; also the *Ichneumon* parasitic on the larvæ of this species, with its cocoon. He likewise exhibited *Notodonta trepida*, three specimens of the rare *Xylina conspiciatilis*, *Cerata Servillana*, and *Anchylopera Upupana*, all taken at Darenth Wood in May.

Mr. Douglas exhibited specimens of *Nepticula aurella*, reared from bramble-leaves, and the cocoons formed by the larvæ after they left the leaves in which they had fed;

* By mistake printed *Filland* at p. 3399, and subsequent pages.

from these cocoons, which were green, flat, and shaped like a stock-seed, the pupa-skin was seen projecting.

The President read a letter addressed to him by Robert Smart, Esq., of Sunderland, describing a trap for cockroaches commonly sold in the crockery-ware shops of that town. "It resembles" he says "an inverted basin, with a hole about an inch in diameter at the top, the sides being somewhat rough and rather indented. But the grand desideratum" he continues "is some substance that the insects will greedily eat and which will poison them; in my humble opinion it is a matter not undeserving a scientific investigation, and not unworthy the attention of the Entomological Society."

The President read the following letter from William Atkinson, Esq.:—

"32, Gordon St., Gordon Square,

May 31, 1852.

"Dear Sir,

"In March, 1849, I had some correspondence with you respecting the insect that eats the corks in bottles of wine in cellars; and observing by the Reports of the Entomological Society that the subject has been brought before you twice recently, I have much pleasure in presenting herewith to the Cabinet of the Society, a specimen I have succeeded in capturing, which I presume will remove any doubt as to its being the larva of a Lepidopterous insect that commits the ravages complained of. It is somewhat extraordinary that although in every visit to my cellar I make an examination, I have never yet seen a moth or found a chrysalis.

"The question has been debated in your room—'How to get rid of this nuisance?' In my opinion, in addition to cutting close and sealing the corks, the wine should be re-binned *perfectly free from saw-dust*, at the same time carefully removing the saw-dust from the cellar; for in the saw-dust the caterpillar no doubt changes into the chrysalis, and the moth lays its eggs. It is through this medium, I feel certain, the mischief is transmitted from the wine-merchant's cellars.

"It appears to me, that the insect cannot possibly be imported in the cork, as has been suggested, after it has undergone the process of firing, and sometimes, I believe, of boiling, and also the cutting into corks. The very act of driving a cork into a bottle would certainly crush any eggs, in which state only could the insect be in the corks; and I should think it unlikely that the moth is furnished with the means of penetrating the cork, to deposit its eggs therein.

"Begging you will excuse my offering these opinions on the subject,

"I remain, yours obediently,

"WM. ATKINSON, F.L.S., &c."

"J. O. Westwood, Esq."

The specimen sent was the shrivelled larva of a small Lepidopterous insect, apparently that of *Oinophila v-flava*.

Mr. F. Smith read a note entitled "Observations on a Paper by G. Newport, Esq., F.R.S., 'On the Anatomy and Development of certain Chalcididæ and Ichneumonidæ, compared with their special Economy and Instincts; with Descriptions of a new Genus of Bee-parasites,' in the 'Transactions of the Linnean Society,' vol. xxi. part 1."

The Secretary read a paper communicated by Mr. H. W. Bates, "On the Habits of the Coleopterous Megacephalæ of the Amazonian Region."

Mr. White observed that it would be well to inform collectors at the Cape of Good

Hope of the facts now stated, for *Platychile pallida*, which occurred there, had a similar structure to these *Megacephalæ*, and probably similar habits.

Mr. Douglas read the following note, being the substance of an article in the *Annales de la Société Entomologique de France*, 1851, p. 323, by M. le Colonel Goureau, entitled "Note pour servir à l'Histoire de la *Sericoris antiquana*, Dup."

"In the neighbourhood of Cherbourg, the farmers give the name of 'the hermit' to a larva which is found in the roots of *Stachys arvensis*, into which it bores a longitudinal gallery, acquiring at the same time food and shelter. Usually there is only one larva in a root, but sometimes two are found, at some distance from each other.

"On the 1st of December, 1849, I first had an opportunity of examining the roots of *Stachys arvensis*. On cutting them longitudinally, I found some quite entire, some fistulous throughout, and others pierced with a gallery nearly cylindrical in form, extending almost the whole length of the root, and containing a larva which moved quickly, either forwards or backwards, to that part of its tube which was not opened. The larva of this moth is very sensitive to the air and light, and when the end of its habitation has been cut off, it immediately closes the aperture with a silken covering.

"On the 21st of February, 1850, and the 28th of May following, I examined fresh roots of *Stachys arvensis*, in which I found very few of these larvæ. Those of the latter date presented two round reddish spots, resembling slight bruises, on the seventh or eighth segment. To succeed in rearing these larvæ it is necessary to keep the roots in damp earth, or they will wither, and the larvæ perish. They change to pupæ within their gallery, and the moth appears at the beginning of July.

"*SERICORIS ANTIQUANA*, Dup.

"*Orthotænia antiquana*, Guén.

"Larva—Cylindrical, of an uniform livid white; head chestnut-brown, the jaws and labrum blackish brown; some hairs on the head and segments of the body; legs white."

The President read a Memoir on some new Lamellicorn Coleoptera, supplementary to his Memoir on the family published in the 4th volume of the Society's 'Transactions.'

The Secretary read the following letter:—

"Colegio del Espiritu Santo,

"Bogotá, Nueva Granada,

"April 1, 1852.

"Sir,

"I forwarded to you a butterfly a few days ago, for the Society. It is considered rare in this country, and it occurred to me that your Museum might not contain a specimen. I suppose it is of the genus *Morpho*.

"I am considering the best and easiest method of preserving wood from the attacks of Termites. I should imagine that Kyan's or Bethell's process would succeed, and am not aware that either has been used for such purpose. Truly grateful should I be to any Member of the Society who would give me an opinion on this subject.

"I am, Sir, yours obediently,

"THOMAS JONES STEVENS.

"P.S.—I forgot to say that the specimen comes from Muzo, mean temperature in the shade 75°."

"The Secretary of the Entomological Society."

Mr. S. Stevens read the following extract of a letter, addressed to himself, from George Bush, Esq., dated "Orillia, Canada West, February 18, 1852:—

"I know that you take great interest in anything relating to the capture of moths, and I have found out some new methods which may be of use to you. In summer I let some dirty soap-suds stand for a few hours, and exposed to our powerful sun they soon become offensive. In the evening I take any old pieces of rag, dip them in the liquid, and then hang them on the trees; the moths soon find them out, and no matter how many trees and flowers are in bloom, I have still many moths come to my cloths. I have even placed them near a large bed of the most fragrant flower in Canada (*Asclepias Syriaca*), and still had my share of moths. The Geometrine moths and many of the Nocturna are extremely fond of the fermented soap. This plan may not succeed in England; perhaps the weather is not sufficiently hot, and the English Lepidoptera may be more refined in their tastes. I have frequently seen butterflies here on dead fish, &c. The plan I have just mentioned is even more successful here than sugar in England; I think I have seen as many as seventy moths on a surface of 18 inches square, on a favourable night. I have tried sugar at different times without any success. The moths will come to the sap of the sugar-maple tree, but that will only run when the nights are frosty, so that very few species are in season at that time of the year. I think in England, by having a very brilliant light in the woods, you might capture a great many moths. I use for that purpose the birch-bark, which gives an intense light."

Mr. Stevens said he had tried the soap-suds once without success; but he thought they were not sufficiently putrid.

Part 1, vol. ii., n. s., of the Society's 'Transactions' was announced as just ready.—J. W. D.

Proceedings of the Microscopical Society of London.

March 17, 1852.—GEO. JACKSON, Esq., President, in the chair.

L. S. Beale, Esq., Dr. Hamilton, and C. C. Smith, Esq., were balloted for and duly elected Members of the Society.

A paper by Geo. Shadbolt, Esq., entitled "Hints on the subject of collecting Objects for Microscopical Investigation," was read. In this paper the author gave a brief account of the mode of collecting Diatomaceæ, Desmidiæ, and other Algæ. He also mentioned several localities where such objects are to be met with, more particularly noticing the neighbourhoods of Northfleet and Bromley, in Kent. He described the necessary apparatus, and also pointed out the various appearances assumed by the objects sought for. He also gave many useful directions as to the mode of securing them when found.

Mr. De la Rue described an instrument constructed by Mr. Peters, for producing minute writing on glass. Specimens of the writing were afterwards exhibited to the meeting.

April 28, 1852.—GEO. JACKSON, Esq., President, in the chair.

R. Shuter Boswell, Esq., the Rev. W. Read, Robt. Ceeley, Esq., Dr. Kingsley, and Jas. Hilton; Esq., were balloted for and duly elected Members of the Society.

A paper by J. B. Simonds, Esq., "On the occurrence of a Membranous Cell or Cyst upon the Olfactory Nerve of a Horse, containing a large Crystal of Oxalate of Lime," was read. In March last a pupil of the Royal Veterinary College found, on dissecting the brain of a horse, a small transparent cyst, possessing a very bright and glistening appearance, attached to a portion of the olfactory nerve. It was supposed to be a hydatid, but upon examining it under the microscope, with a 2-inch object-glass, a large octahedral crystal of oxalate of lime, with beautifully defined facets, was seen floating freely in a limpid fluid, which distended the walls of the cell. The exact size of the crystal was not stated, but it can readily be seen by the unassisted sight. The author concluded with some observations on the frequent occurrence of carbonate of lime in herbivorous animals, and the rarity of the production of oxalates.—J. W.

Proceedings of the Dublin Natural History Society.

The usual monthly meeting of this Society was held on Thursday, PROFESSOR ALLMAN in the chair.

The minutes of the previous meeting having been read and confirmed, the Chairman called on Mr. J. B. Kinahan for his paper, "Observations on the Spawning of *Gasterosteus leiurus*, and on the Fishes of the River Dodder."

"Concerning the manner in which this little fish preserves its spawn, not the slightest notice, if I may be allowed to judge from the silence of our latest authorities, has been taken by any English naturalist. This is the more strange when we recollect that a habit, analogous in its nature, has been recorded of another species of the same group, whose habitat (the sea) renders it more difficult to make observations thereon, while the species under consideration may be found at every man's door, being, without exception, the most extensively distributed of all the British fishes. Yet neither Yarrell in his 'British Fishes,' nor Sir W. Jardine in the 'Naturalists' Library,' makes any mention of this habit, though the latter has recorded the nest-making powers of the marine species to which I alluded just now—*G. Spinachia*. In France, M. Coste has entered very fully into the matter in a paper read before one of the Societies in Paris in 1847; but as the following observations were made long prior to my having seen his paper, and differ in some respects from the facts recorded by him, and as he has not mentioned the species on which his experiments were made, I thought these observations might not be unworthy a place in your 'Transactions.' In 1846 my attention was first called to this curious habit by a friend of mine. I then made a series of observations, most of which I have been able to confirm during each succeeding

year, and the substance of which I now hasten to lay before you. Into the question of whether this be a distinct species, or merely a well-marked variety of *Gasterosteus aculeatus* of Bloch, it is not my intention to enter. Suffice it for us to consider it as a distinct species, the smooth-tailed stickleback, the *G. leiurus* of Valenciennes and Cuvier. It is the only species I have been able to detect about Dublin, where it abounds in prodigious numbers. When about to spawn, the fish select a suitable spot for the foundation of their nidus, preferring a gravelly bottom, not too deep, and over which a current runs; hence the best place to look for the nests is where clear streams empty themselves into a river. At such a place you will almost invariably find abundance of them in the months of May, June and July. Another favourite locality is a large flat stone at the bottom of the river, over the edge of which the water flows, so as to produce a ripple. Having chosen a suitable spot, he (for it is always the male that builds) begins by laying a foundation. This is slightly modified, according to the materials of which the superstructure is to be made. If, as is most usually the case, of straws and such like, the first thing done is to lay a number of these on the bed of the stream, carefully tucking the ends of them down into the gravel upon which they rest; across these are laid other straws, the ends of which are either interlaced amongst the first row, or tucked into the gravel. This last operation is always performed by means of the animal's snout, the point of which he places on the end of the straw, &c., and then raising the body perpendicularly, he thus presses the straw or other material among the stones or mud. Amongst and over these straws *Confervæ* and such like are interwoven, rendering the whole one compact mass, through which the water, however, can have free passage. He always takes care to preserve a dome-like hollow in the centre, in the top of which there is a small round hole; the edges of this he takes particular care to strengthen, tucking in the straws and rounding off the edges most industriously; and every now and again he pauses in his task, and remains hovering over the nest, as though trying by the current produced by the motion of his fins whether the structure is secure enough or not. Sometimes the nest is entirely made up of fresh-water *Alge*, and in this case the foundation is a most beautiful object, being as circular as though marked out with a pair of compasses. I have also seen it composed almost entirely of decayed leaves of trees; this was in a muddy ditch, and the nest was a most untidy-looking affair. Whatever materials he uses, he always takes care to preserve the hole in the centre, boring at it every now and then with his snout for five minutes at a time. It is most interesting to watch the little architect at his labours; one while with a straw or piece of stick in his mouth, three or four times as long as himself, or else carrying a bunch of *Confervæ*, in which his head is nearly completely concealed; at another while, either hovering over the nest or boring at it with his snout, or else attacking some audacious intruder who has dared to trespass on his domain—for I believe it is well known that these fishes always select a spot for themselves, over which they keep guard with the greatest jealousy. One morning I was much entertained by a contest of this kind. Two fish had selected a large flag, of about two feet square, as the foundation for their nests. Every minute or two, either in procuring straws, or in returning with them, they would come in contact; then there would be a rush at each other, and in a minute or two, the weaker fish having given way, there would be a chase for two or three minutes, during all which time the fishes never dropped the straws; the conqueror invariably returning in triumph, and sailing proudly two or three times round his nest. They seem to have some judgment in the selection of their materials, as I have often observed a fish, after carrying a straw for some dis-

tance, to drop it as though of no use ; and it invariably happened, that if another fish took up, by any chance, a straw which had been thus rejected, he also, after a short while dropped it, as if his instinct informed him that it was worthless. The time the nest takes in building varies considerably ; one that I timed took five hours in the building, from the time the first layer of straws was laid till the fish stopped work. I never was fortunate enough to see the operation of depositing the spawn, as I never was able to spend more than five or six hours at a time watching the fish, and believe the spawn is deposited in the dusk of the evening. The spawn having been deposited, the male, or, as the country people call him, the cock, mounts guard, never going far from the nest, at least for a time, and may be seen hovering over the sacred deposit, ready to give battle to any enemy approaching its neighbourhood. At this time they are very bold and pugnacious, and I have known them even to dart at my hand and strike me with their spines when I went to take the nest. How long this watch is kept up I am not positive, but I think it must be continued till their young are hatched, as I never found a nest unguarded. These are the principal observations I have been able to make on this little fish. I doubt not that they have occurred to other naturalists ; but as I do not find them recorded, I feel myself justified in bringing them before your Society.

"As to the distribution of this fish, it is found throughout the entire course of the river, from its head in the Butt of Kippure to the Liffey mouth, and in all its tributaries.

"Of other fishes there are twelve, three of which at least, if not five, were introduced. They are :—

"1. The trout (*Salmo Fario*), also found throughout the entire length of this river and its tributaries. In the upper part of the stream, near its source, they run very small, seldom if ever exceeding from a quarter to half a pound in weight ; in the lower parts of the stream they have been caught weighing as much as 10 lbs. : the general weight, however, here seldom exceeds 3 lbs. The year before last I saw one taken on an eel-line, which wanted but an ounce of 4 lbs.

"2. The salmon (*Salmo Salar*) principally come up the river during the winter and spring floods ; salmon fry are, however, taken nearly every autumn.

"3. The gravelling (*Salmo Salmulus*), principally found in the lower part of the stream, and swarms in the river at particular seasons.

"4. The loach (*Cobitis barbatula*), found plentifully all through the river. The largest I have seen were taken a little below the fair-green at Donnybrook ; they exceeded 6 inches in length.

"5. The flounder, (*Platessa Flesus*). This fish formerly, before the erection of Haigh's weir, used to be quite common all along the fair-green. The erection of this weir confined them to the portion of the river below it, so that the only specimen I know of as having been taken in Donnybrook, was a small one, about the size of a crown piece, taken by teeming a hole after a flood, just below where the wooden bridge used to stand to within the last year. The weir to which I allude has been removed, and flounders are now taken up as far as Ball's-bridge.

"6 and 7. Both the sharp-nosed and blunt-nosed eels (*Anguilla acutirostris* and *A. latirostris*) may be taken at any time, but especially after the early autumnal floods ; they grow as large as from 2½ lbs. to 3 lbs. weight.

"8. The rudd (*Leuciscus erythrophthalmus*). These used to be very common in the lower parts of the stream below Rathfarnham, but a few years since, owing to the deleterious effects of the waste waters from some mills, they became very scarce ; they are,

however, becoming plentiful again, and on a fine sunny day may be seen in shoals in many parts of the stream, especially below the Anglesea bridge, playing on the top of the waters. They seldom grow larger than 6 to 9 inches; they abound in the pond attached to Rochford's iron-works at Clonskeagh, but are rather shy of taking a bait. The lower orders call them perch. I have great doubt as to their being indigenous in this river, and am rather inclined to think that they, as well as the next, have found their way into these waters from the canal which joins this river at Ringsend.

"9. The perch (*Perca fluviatilis*). As stated just now, I have strong doubts of the claims of this fish to be considered a native of this river; however, there is good proof that it has been found here for the last twenty years. The only places I know of its having been captured in are three — Rochford's pond; where, as I have been credibly informed, a fish weighing 6 lbs. had been taken some years ago, and where I have seen fish of nearly a pound weight captured in 1850; in the bed of the river just above the weir which supplies the Donnybrook saw-mills; and just below the Anglesea-bridge. I myself introduced nine perch, of from half to a quarter of a pound in weight, as an experiment, into the last-mentioned locality, in 1849. They thrived and bred, as I saw them about the place where I had liberated them in 1850; but I have not seen them since, and have not been able to find anything more of them.

"Whatever doubts there may be as to whether any of the above-named fish have been introduced, there can be none, I think, concerning those to which I am now about to allude—the gudgeon and minnow.

"10. The gudgeon (*Gobio fluviatilis*) was introduced into the Dodder from the Swords river about twenty years ago, by a fisher, who, living in Dublin, disliked the trouble of going so far for bait. Such, at least, was the account I got of the matter, and from inquiries made I believe it to be true. They now absolutely swarm in the river, growing often to the length of 10 inches. I have never seen them above Templeogue.

"11. The minnow, (*Leuciscus Phoxinus*). This, as I have stated before, was introduced with the last, and, like it, now swarms in certain parts of the stream. The largest I have seen were taken just below Classon's bridge, near Miltown. Some specimens were as much as 4 inches in length. The capture of these and the last-mentioned fish, for bait for anglers, affords employment for three or four men during the summer months.

"This concludes the list of the Dodder fish, exclusive of marine species, many of which are found at its mouth, in the tideway; but as I have never had an opportunity of examining them, I have preferred passing them over altogether, to giving details of the truth of which I was not convinced. I have also been often told of a pike, that had his lair below Clonskeagh-bridge; but as I never could satisfy myself of his existence, I have omitted him altogether, although I do not see why a stray jack might not make his way up this river from the Grand Canal.

"This concludes my notes; and imperfect in many respects as they are, I have been induced to lay them before your Society, first, in the hope of drawing from some of the members who are better qualified for the task, similar lists for other localities; and, secondly, because I am convinced that nothing solid can be done for developing the Natural History of this island, until we have similar local lists of at least every county in Ireland—lists not merely of the fishes, but of every class of animated nature, showing the distribution, variety, &c., of every species, and thereby clearing away a

great many of the mysteries and doubts that at present envelope the Fauna of this country."

Mr. Kinahan then exhibited a plant of a fern, a variety of *Polystichum aculeatum*, found by him at Bohernabreena, county Dublin, in 1849, which in 1850 was handed over to the care of the College Botanical Garden, where it had thriven, but had not exhibited any seed-vessels as yet, though presenting a tendency to throw out bulbillæ. Mr. K. remarked on the general redundancy of form in the ferns, and exhibited specimens; and referred to this as the only known example of the reverse, and made the following statement:—

"The example of *Polystichum aculeatum* now submitted to your Society, is curious as being an exception to the law which seems generally to prevail among the ferns as regards varieties. These generally differ from the typical plant, by having something added to them, either an actual expansion or a subdivision of the typical parts. Of this we have a very good example in those varieties of *Athyrium Filix-fœmina*, to which the name of *viviparæ* has been given, in which we find tassels appended to the pinnæ. We also have a good example of it in the variety of *Polystichum angulare* obtained at Ballinteer in this county, in which, as you see, the pinnæ, particularly near the upper extremity, and the frond, are enlarged, so as to give a more expanded appearance to the entire frond. Now let us contrast these with the variety to which I first drew your attention, as the great difference must strike you at once. In this we find the broad pinnæ of the type replaced by narrow linear leaflets in some of the fronds, resembling spines or points, while in others they have totally disappeared, especially at the upper half of the frond, which in many presents a long filament totally destitute of any pinnæ. These appearances have continued constant under cultivation, as must be evident if we compare the plant now with these fronds taken from it in August, 1849, when I found it growing on slate rocks by the side of a stream, which, running through Frairstown House demesne, falls into the Dodder just above Bohernabreena. This glen seems favourable to the growth of varieties, as I also obtained there these specimens of *Aspidium Filix-mas*. Varieties of ferns are, indeed, commoner than many think, in particular places abounding almost to the exclusion of the ordinary type; thus, at Kilmaganny, county Kilkenny, the variety of the common hart's-tongue to which the name of *ramosum* has been given, is far commoner than the ordinary undivided form. This is curious, as many have denied its being anything but a garden variety. The variety of *Polystichum* to which I first drew your attention has, as I stated before, continued constant under cultivation; it has not, however, produced any trace of fructification, though this year some of the fronds show a tendency to produce germs in the axils of the pinnæ. In conclusion, I beg leave to draw your attention to these fine specimens of *Asplenium marinum*, some fronds of which are 24 inches in length, bearing on them pinnæ of 2 inches dimensions, which far exceed any I have seen recorded in either this country or in England. They were obtained at Foxe's Cove, Ballymacarte, county Waterford, in holes in the sea-cliffs, and, when growing, furnished one of the most elegant examples of vegetable beauty I ever saw."

Mr. Ffennell, Inspector of Fisheries, inquired if Mr. Kinahan could account for the diminution of the gravelling which formerly swarmed in the Dodder. He also remarked on the length of the gudgeon, 10 inches, as observed by Mr. Kinahan, as being so unusual, and supposed there was some local reason therefor, as in his experience of the rivers of Ireland, he had never seen any approaching that length.

Dr. Allman remarked on the interesting character of Mr. Kinahan's paper, and

considered the observation of the local Fauna of Ireland as most important, and by which alone many of the doubts and errors of naturalists could be rectified.

Mr. Kinahan referred to the statements of Yarrell and others on the spawning of *Gasterosteus*, that they deposit their ova on the leaves of aquatic plants; and stated that he believed it was an error copied from previous writers, as he never found the ova on plants, but invariably deposited in the dome of the nests, several of which were exhibited to the meeting.

Mr. Ffennell remarked on popular ideas relating to fishes, as respects their plenty or scarcity, and alluded to the idea of pike being in the Lakes of Killarney, but from his experience he believed there were none in the waters of Kerry, with the exception of a small tributary to the Blackwater, at the bounds of the county Cork.

Dr. Allman communicated an abstract of his views of the *Medusæ* and *Hydroid Polypes*. He believed that the essential part of the disk of a *Medusa* was the system of gastro-vascular canals, which, at their origin, communicate with the stomach, and thence radiate towards the margin of the disk. These canals are represented by the tentacula of *Hydra*, which consist of two distinct layers, besides muscular fibres, and thus, so far as structure is concerned, correspond with that of the gastro-vascular canals of the *Medusæ*; while the relation of the tentacula in the one, and the gastro-vascular canals in the other, to the digestive system, is also precisely similar in the two groups. The peduncle of the *Medusæ* is exactly represented, both in internal structure and external form, by the anterior portion of the body of the *Hydra*. We have thus, in order to convert a *Hydra* into a *Medusa*, only to suppose the external layer or demis of the tentacula to be extended at each side into a kind of web, uniting the tentacula to each other, and the posterior elongation of the body with its adhesive disk to become suppressed, neither of which conditions involves any essential modification of structure. The *Hydroid polypes* generally are fixed animals, incapable of locomotion; in *Hydra* an imperfect locomotion is permitted, and the creature can detach itself from the bodies to which it adheres, and slowly creep about by means of its tentacula and adhesive disk, while in the *Medusæ* the locomotive powers are carried to their maximum, and the tentacula, which in the polypes are free, are united by a membrane in the *Medusæ*, and thus constitute the large locomotive disk by which these beautiful animals swim with rapidity and ease through the surrounding water.

Mr. Ffennell then made some observations with reference to the par being the young of the salmon, as he was anxious to remove doubts that existed in the minds of some. He exhibited three specimens in a bottle, showing the bars on one well developed; a second, in which the bars were fainter; and a third, wherein the silvery scales had nearly obliterated the bars: these were taken in a pool at Ballycroy, where they had been left by the subsidence of the river, the intermediate water being too low to admit of their regaining the main stream. He also exhibited another bottle, containing three specimens, taken at Killaloe; one an unusually large fry, in silvery state, fully 10 inches in length, and large in proportion, on his way to the sea. Having concluded, Mr. F. produced specimens of the pollan, taken in November, 1851, in Lough Neagh, and some taken in Killarney on the 8th of May last; and observed on the difficulty of touching them without removing the scales. He directed the attention of the meeting to the difference in the shape of the head and gill-cover of the specimens from the two localities.

This being the termination of the session, the meeting was adjourned to November next; in consequence of which the following gentlemen, proposed and seconded, will

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be balloted for at the next meeting of Council: — Captain Norton, Frederick Sutton, Esq., George B. Owens, M.D., and John North, Esq.

Proceedings of the Society of British Entomologists.

May 4, 1852.—Mr. HARDING, President, in the chair.

The President exhibited a specimen of *Aleucis pictaria*, in fine condition, taken near Dartford, during the past month.

The President also announced a present from a friend of a box of insects for the Cabinet.

Mr. Sequiera exhibited a box of insects taken during the past month, among which were some interesting specimens.

June 1, 1852.—Mr. HARDING, President, in the chair.

The President announced a donation of 276 Lepidopterous insects to the Society's Cabinet, from Mr. J. T. Norman.

The President exhibited some specimens of *Trochilium Cynipiformis* and *Culiciformis*, together with some of the chrysalides and cocoons.

Mr. Briant exhibited a box of insects taken during the past month.—J. T. N.

NOTICES OF NEW BOOKS.

' Histoire Naturelle des Insectes. Species Générale des Lépidoptères. Noctuelites.' Par M. A. GUENÉE.

EVERY now and then the work of a master mind so exhausts a subject in one or other of the departments of Natural History, as to supersede all that has preceded, and commence a new era whence future observations must be dated. Gravenhorst performed this service for entomologists as far as the ichneumons are concerned, Kirby as far as bees, Schönherr as far as curculios, and Guenée has now performed it as regards the Noctuæ. In all future compilations we must date from Gravenhorst, Kirby, Schönherr, Guenée, &c., as the founders of that particular and restricted branch of science of which they treat. Of all works thus devoted to what might be called monography, that by M. Guenée is the most elaborate, most careful, and most complete: it leaves nothing to be desired, and is in all respects a model for future labourers in the same field.

It extends to three volumes, of more than 400 pages each; describes about 2000 species; and is embellished with 24 plates, 23 of which are excellently coloured, and the 24th contains minute structural details of palpi and antennæ.

'Great Artists and Great Anatomists.' By R. KNOX, M.D., F.R.S.E.,
Lecturer on Anatomy, and Corresponding Member of the Académie Nationale of France. London: Van Voorst. 1852.

THE funniest book we ever read. We believe Dr. Knox to be in earnest; were it otherwise — did we imagine his little volume to be a burlesque or a romance — we should not notice it in the 'Zoologist.' The author evidently considers that the world has produced seven men infinitely greater than all the rest; that these are Knox, Napoleon, Cuvier, Geoffroy St. Hilaire, Leonardo da Vinci, Michael Angelo, and Raphael: that Scotland, France, and Italy have the honour to be the only countries capable of producing greatness: and that England can neither produce nor appreciate greatness. We learn that Cuvier's great work on comparative anatomy "produced no sensation in England, where its object, owing to the character of the prevailing race, was wholly misunderstood," — p. 24. And again: — "What passes for the views and theories of Cuvier in England, does not belong to him. They emanate from a school with whom truth in science is of no moment, &c. &c.," — p. 29. And again: — "Pirates, contrabandistas, appear from time to time on this great sea of discovery, chiefly English, who, under pretence of pointing out a few barren rocks and sand-banks which Cuvier had neglected to describe or deemed unworthy of notice, conceal their scandalous calling: and how they live and fatten on the brains of genius!" In the next page we are called "Flibustiers;" and so on throughout the book. In fact, the author's abuse of England and the Anglo-Saxon race appears to us rather excessive; but then, being ourselves Anglo-Saxons, we are scarcely perhaps impartial. We believe that were Dr. Knox to visit the Middlesex bank of the Thames, between the Custom-house and London-bridge, he would occasionally hear Anglo-Saxon invective quite as *recherché* as his own: but, for the honour of England, it must be said that we never think of introducing it to ears polite, or of publishing it in our books.

Not to know Knox argues oneself unknown : but however humiliating may be the confession, we candidly confess that we never heard of Knox until this his volume was placed in our hands. On inquiry it turns out that Knox is a Celtic lecturer, who has achieved auto-greatness by adopting some of the extravagant hypotheses of the German naturalists, and by numbering among his pupils a few canny Celts, who have quartered themselves comfortably on the Anglo-Saxon public : but if he ever did any good in the educational line, he must have had a better temper and more patience than he now possesses ; for, to read his book, one would conclude that, like a vicious horse, he carefully eschewed work, and devoted his energies entirely to kicking and biting.

In conclusion, we have no sympathy with a writer whose vanity is so egregious, whose prejudices are so violent, and whose views of science and literature are so narrowed, as those of Dr. Knox.

Description of the Yellow-backed Whidah Finch killed in Oxfordshire in September, 1851. By the Rev. A. MATTHEWS.

IN the month of November last I informed you of the occurrence of the yellow-backed Whidah finch in this country ; and I now forward a description and figure of the specimen, together with such other information as I have been able to collect.

The species has been described by Swainson, in the 'Naturalists' Library' (vol. vii.), as the *Vidua Chrysonotus* ; and it is also figured and described by Viellot, in his 'Oiseaux Chanteurs' (pl. 41), under the name of *Fringilla chrysoptera*. From this latter author we learn that there is a great difference between the summer plumage of the two sexes, the female, throughout the year, being clothed in a plain drab-coloured garb, much resembling in its markings that of our common bunting ; while, during the summer months, its mate is gaily dressed in a suit of bright glossy black, bearing on the shoulders a mantle of brilliant yellow, and adorned on the back of its neck with an ample ruff of elongated recurved feathers. On the approach of winter, however, all his ornaments are laid aside, and the male bird then assumes the more sober colour of his partner.

The specimen now before us admirably illustrates this periodical change ; we here see the plain drab colour gradually superseding the more brilliant hues of summer ; while on the back of the neck a few

remaining black feathers, by their recurved shape, still point out the former position of the ruff. In describing this bird, I have taken it for granted that the plumage is in a state of transition from the summer to the winter dress, though the appearance of some of the feathers would almost suggest a contrary change being in progress. Possibly the young males do not assume the full adult plumage until their second year, and appear in a mixed, imperfect garb during the first breeding-season.

As the species is a native of Africa, this individual may have been brought thence in confinement; yet there is nothing in its appearance to justify such a conclusion, nor does it seem at all improbable that it might have wandered hither of its own free will. When killed, it was in the company of a flock of our common finches. Its crop was filled with the seeds of grass and other small herbs, and it was reported, on dissection, to have proved a female; this must clearly have been an error of the person who preserved it, as the plumage sufficiently indicates its true sex. It was shot in September last, upon Otmoor, in this county, a tract of low ground comprising upwards of 2000 acres, the whole being subject to extensive floods, and often visited by many of our rarer birds. Until the beginning of the present century it was entirely waste, but has since been inclosed.

The following description has been taken from the specimen in its present state; it is now in the collection of the Rev. W. S. Hore, of St. Clement's, Oxford, who has very kindly allowed me to make known its occurrence.

Length,	7½ inches.
Wing, from carpal joint,	3½
Tail, total length,	3½
Tarsus,	1
Middle toe,	¾
Bill, from base,	⅞

Upper mandible of the bill black, lower mandible of a pale horn-colour shaded with black. Feathers of the head, front of the neck, anterior part of the breast, belly, rump, and lower part of the back, together with the wings and tail, of a deep glossy black; in most of these parts a few brown feathers of the winter dress may be already seen. On the lower part of the breast is a large and conspicuous white patch, above which, and also on the upper coverts of the wing, are a few feathers tipped with white. On the back of the neck and shoulders the winter plumage prevails; on the former, however, a few

recurved black feathers still remain ; and on the shoulders the bright yellow silky mantle of summer is yet seen to a considerable extent. Among the upper or smaller wing-coverts also are many bright yellow feathers. The larger coverts are all narrowly margined with dull white. Legs, with the feathers of the tibiæ, black ; tarsi, toes, and claws, which are rather large, apparently of a dusky reddish brown.

A. MATTHEWS.

Weston-on-the-Green,

March 31, 1852.

Notes on the Arrival and Departure of Migratory Birds in Norfolk.—

Great snipe, August 26.	Wryneck, April 10.
Curlew, August 28.	Snipe (eggs), April 13.
Gray wagtail, September 18.	Jack snipe (last seen), April 13.
Common buzzard (immature), Sept. 24.	Wigeon (last seen), April 15.
Peregrine falcon (immature), October 5.	Pochar'd (last seen), April 15.
Mealy redpoll, October 17.	Cuckoo, April 20.
Hooded crow, Oct. 20, last seen Apl. 14.	Great crested grebe, first seen in <i>full</i>
Long-tailed duck (immature), Oct. 31.	summer plumage April 20.
Gray phalarope, November 1.	Fieldfare (last seen), May 3.
Spotted crane, March 20.	

In the above notes it will be seen that the more common migratory birds have been omitted, except when their appearance was either rather late or early. — *L. H. Irby ; Saham, Norfolk, June 14, 1852.*

Occurrence of the Gull-billed Tern (Sterna Anglica) at Scilly. — This species may now be added to the Cornish Fauna, as I had an opportunity, during the past week, of examining an adult specimen, through the kindness of John Jenkinson, Esq., a relative of the lord proprietor of the Scilly Islands, who shot it when on a visit there in the latter part of May or the beginning of June. — *Edward Hearle Rodd ; Penzance, June 28, 1852.*

Occurrence of the Iceland Gull (Larus Islandicus) at Scilly. — A specimen of this lesser white-winged gull was also shot at Scilly by Mr. Jenkinson, about the same time as the *Sterna Anglica*. It is in that state of plumage where the whole of the upper parts are of a dull white, with occasional brocoli-brown markings ; the interior or smaller webs of the quill-feathers are of a pale brown colour, but the remainder of the wing is entirely white. In this state of plumage the bird at a little distance has the appearance of being nearly white. — *Id.*

Swans breeding at the age of Two Years. — I believe it is generally thought that swans do not breed until they are three years old ; I have now a pair, two years old, that brought off six strong cygnets yesterday. There is an old (I believe) pair at Waddon, which have nine young ones some weeks old. — *S. Gurney, jun. ; Carshalton, June 9, 1852.*

NOTICES OF NEW BOOKS.

*Life of the Rev. William Kirby.**

WE scarcely know a more inviting subject than the Life of Kirby—a man whose quiet unpretending character, and great knowledge of Natural History, obtained from all fellow-labourers the most unbounded respect and love. It required a master's hand to trace the likeness of such a character on the printed page, so that all who once knew him might exclaim "How like!" Whether Mr. Freeman has done this; whether he has succeeded in representing this truly christian naturalist with perfect accuracy; whether he has not brought forward slender polemical powers in too prominent relief; whether family pedigree has not been too elaborately worked out; we leave others to decide: for ourselves, we regret to learn that *our* Kirby, *the naturalist's* Kirby, was ever a hot controversialist; and we care not one straw that his mother was nineteenth cousin to a peer, and of the purest blood of the Medewes; neither do we see anything at all deplorable in the fact that Kirby himself should have married a pretty little Methodist, whose parents, although "none are so chained and fettered in the operation of their mind" as the sect to which they belonged, freely allowed their daughter "to follow her own inclination in considering herself a member of the Church of England." To what does all this amount, but that the little village beauty was glad enough to give up methodism, or any other *ism*, so that she could catch a nice young parson, of prepossessing countenance, of comfortable means, and of unblemished reputation? Pretty Sally Ripper proved a good and true wife to William Kirby, although we cannot find that Mr. Freeman has traced back her pedigree to the peerage. There is however one point which speaks volumes in favour of the naturalist: Mr. and Mrs. Ripper, the dissenters, the ex-grocers, the parents of Sarah Kirby, "spent the evening of their days in the quiet repose of Barham parsonage." But our business here is with Kirby as an entomologist, the character in which he is best known to the readers of the 'Zoologist.'

We have already, in a brief memoir of Mr. Kirby, explained how his attention was first turned to Entomology; we now repeat it in his own words:—

* 'Life of the Rev. William Kirby, M.A., F.R.S., F.L.S., &c., Rector of Barham.' By JOHN FREEMAN, M.A., Rural Dean, Rector of Ashwicken, Norfolk. London: Longmans 1852.

"About half a century since, observing accidentally one morning a very beautiful golden bug creeping on the sill of my window, I took it up to examine it, and finding that its wings were of a more yellow hue than was common to my observation of these insects before, I was anxious carefully to examine any other of its peculiarities, and finding that it had twenty-two beautiful clear black spots upon its back, my captured animal was imprisoned in a bottle of gin, for the purpose as I supposed of killing him. On the following morning, anxious to pursue my observation, I took it again from the gin, and laid it on the window-sill to dry, thinking it dead, but the warmth of the sun very soon revived it; and hence commenced my farther pursuit of this branch of Natural History."—P. 67.

He commenced the study of insects under the tutelage of Dr. Gwyn, who, although we cannot charge him with the manufacture of hard names, or the fabrication of eccentric paragraphs in canine Latin, was a good-hearted old man, and a true lover of Nature. Mr. Freeman tells us that

"Dr. Gwyn pressed upon the attention of his friend that the study of Entomology would afford him much delight; that even had he been less a proficient in Botany, he would not find the new study antagonistic to the other, but that both might be advantageously pursued together: as to any assistance in his power, it was cheerfully promised, and readily accepted; and though now in his 75th year, so much was the good old doctor interested in the pursuit of his friend, that he would frequently walk over to Barham, a distance of five miles, to see what had been the success of recent perambulations. The parsonage-house was then approached by a narrow wicket, with posts higher than the gate, and often, while working in his garden, or sitting in his parlour, Mr. Kirby would look up and see, to his great delight, the shovel hat of his facetious friend adorning one post, and the cumbrous wig and appertaining pig-tail ornamenting the other. And soon the kind old man would walk in with his bald head, as he used to say, cool and ready for the investigation. These visits were always hailed with pleasure, the delights of which were still fresh in the memory of Mr. Kirby, and would call forth expressions of affectionate gratitude, even when nearly half a century had elapsed, after his friend, and Mæcenæ, as he loved to call him, had gone to his rest."—P. 69.

No sooner had Kirby entered on this extended field of research, than he commenced a new life. Botany, the Botany of his neighbourhood, he had previously studied and exhausted; but here was a science that was to be life-long, and to be still unexhausted when, at the

ripe age of ninety-one he was gathered to his fathers. Among the most agreeable incidents of the life of a naturalist, are those innumerable friendships which grow with his growth and strengthen with his strength; which are themselves the golden links of memory's chain, and often the only ones which, in after years, lose none of their pristine brightness. One of Mr. Kirby's earliest entomological friendships was with Mr. Marsham, whose 'Entomologia Britannica,' a volume on British Coleoptera, is well known to all our readers. We have a most amusingly desultory sketch, from Kirby's own pen, of an entomological excursion into the Isle of Ely, in company with this Mr. Marsham; an excursion throughout beset with dangers and disagreeables, occasionally varied however with a somewhat more propitious interval, which, like the brief and rare gleams of sunshine on a showery day, was all the more acceptable from its very brevity and rarity. Every fragment of this narrative is agreeable; even the simple assertion that after "spitch-cocked eels, rump steak and green peas," the wine not proving good, "*therefore*," that is, because the wine was not good, "after 'Church and King,' 'Queen and family,' 'Wives and home circles,' my friend [Marsham] soon goes to sleep, and sounds his sonorous trumpet." At the end of one day's narrative the journalist is somewhat facetious upon night-caps, a circumstance that brings to mind a story which we have often heard and often told, but which the biographer shall here narrate himself, episodically, by the way, for it has nothing to do with the trip which Mr. Kirby is here recording.

"It once occurred that Mr. Kirby travelled with two friends, Mr. Marsham and Mr. MacLeay, on a similar excursion, and arriving at an old-fashioned wayside inn, they were told there was only one large room for them, with three beds in it: the arrangement having been made for the night, according to the custom of the time, three night-caps were laid upon the dressing-table: Mr. Kirby retired before his companions, and was soon sound asleep. Perceiving no caps ready for them, his friends enquired for what they considered the due appurtenances of the pillow; they were assured by the hostess that three night-caps were laid upon the table, but they stoutly averred they had not seen them; the landlady no less stoutly maintaining her side of the question. What actually passed in her own mind did not transpire, but she appealed to the first gentleman as being the only one who could throw light upon the subject, when, lo and behold! as soon as his head appeared, in answer to the hasty summons, the three night-caps appeared at the same time upon it, one being dragged over

the other, much to the amusement not only of those present, but also of those who long after heard the tale."—P. 87.

It is impossible to resist the pleasure of giving a long quotation from the journal of this delectable trip.

"At half-past eleven we set off with merry hearts, unprophectic of the evils that befel us, in full expectation of a good hard road all the way to Peterborough, but alas! how grievously were we disappointed! this was indeed to us '*nigro dies notanda lapillo*.'

"For two miles the road is good; when we arrive at Gatesbridge we turn to the left upon a raised causeway, on one side of which was the forty-foot river; on the other, which was very steep, a deep ditch: at first the road was wide enough to drive our vehicle without any apprehension, but after a time it became so narrow as not to leave more than a foot on each side of our wheel and the brink, so that we were in as great peril as navigators of yore, who had to steer between Scylla and Charybdis: what increased the danger was, the road was without rut or horse-path, so that there was nothing to direct the horse but the driver. My friend was greatly alarmed, and my fears were not small, being altogether unused to driving to a hair: on either side of the causeway, for the benefit of starting horses, were erected draining-mills. We were so unfortunate as to meet two carriages (though in a place where there was room to pass): in one the horse and master appeared equally alarmed, so that we trembled for their safety; we ourselves once were within a nail's breadth of an overthrow, but providentially we escaped. After this our alarm rose to such a pitch that we dismounted, and gave our horse to the care of a boatman whom we met, and with joy committed ourselves once more to terra firma. On the causeway we had to pass through a toll-gate where they exacted a heavy toll: I thought it hard to pay toll for keeping a road in so dangerous a state; if they would permit ruts and a horse-path, poor travellers would be spared much alarm. The causeway is four miles in length, of which we walked three. From the bridge the road is hard and spacious for a mile, but then we plunge into a black moor. This was so wet, from the rain of the day before, that it was with difficulty we could persuade our steed to make a walk of it. By the way we observe *Ranunculus Lingua* in abundance; on our right we leave a considerable farm-house, with a row of the largest willows I ever beheld: in this dreary unornamented country this was one of the most pleasing objects we had seen.

"We now make for the Green Man, a small alehouse on the other

side of the bridge. After seeing our poor black-legged beast safe haltered in the stable, with a supply of food, we go into the house and inquire what we can have for ourselves. The bill of fare consisted of pork-steaks solely, with which we were well satisfied, save that we could not conjecture from what part of the animal they were taken.

“At half-past 3, after paying our small reckoning, viz., 8d. a-piece for dinner, and 4d. for the horse, we leave Ponds-bridge. As the afternoon seemed pleasant, and we were desirous of seeing if any of our pigmy friends were on the wing, we agreed to walk, the ostler following with our vehicle. We enter a drift-way, pleasant and green, which tempted us to loiter by the way-side of a dyke to fish for snails and aquatic insects. This way was adorned with many flowers, common here, but not with us. We had observed the clouds in various directions pouring out their contents upon the country beneath them, but without giving us more than a few passing drops; but now we no longer escape.” [The difficulties of the road increase rather than diminish, and I doubt not the fears of the untravelled journalists have already provoked a smile to which none would have bid them a more hearty welcome than the writer; let the reader mark how the bright spot was seized upon when it did present itself.] “Wet and uncomfortable as we were, we frequently turned round to solace ourselves with the sublime spectacle which the heavens exhibited: indeed, this extensive level of fens, where the eye commands the whole hemisphere of sky that is bounded by the visible horizon, without interruption from elevation, is peculiarly favourable for observing the appearances of the atmosphere, and these we had an opportunity of beholding in their full beauty. The prismatic colours were frequently seen to the east, not in a well-defined perfect arch, but in one whose continuity was often interrupted by the passing of black clouds,—at another time they appeared in a mass of unusual width: I could not account for the variations from the common appearance of this appointed signal of Heaven’s wrath suspended and reconciled, and of man’s security in future from a deluge of waters. The sun, which was seen to shine in various directions on the spots of the country widely asunder, would sometimes finely illuminate a single object, at a great distance, which we could see through the rain which was pouring upon us. The clouds themselves were beautiful and sublime, their summits sometimes tipped with silver, sometimes with gold,—again, at another time with fiery red, as if they were ignited. Storm chasing storm, with intervals in which the azure vault of heaven appeared unclouded. The shifting scenery of the heavens made up for the uniform face

and dreariness of this vast expanse of fen, and for the wet which we had to encounter: I shelter from the storm, and find Sparganium simplex: I hasten on again and overtake my friend, who scorned any remedy against the weather. I find him, however, nearly exhausted, when an unlucky slip brings him to the ground, and soils his travelling leathers; however, we at length reach Horsey Bridge, where our vehicle awaits us. We pass Stanground Field; upon nearing Peterborough, a vast expanse of water suddenly opens upon us; a boy bawls to us, 'Sir, Sir, if you go through there your horse will be up to his belly.' For sixpence I get a shoemaker to conduct my weary friend across, while I go round by a causeway, and after losing my way I at length reach my vehicle in safety. I remount, smack my whip, and my horse sets off in a good trot, and we reach Peterborough about eight o'clock. Four hours and a half carried us seven miles and a half!!! Arrive at the Angel wet and weary, and my friend sends for a glover to see if he can get a new pair of small-clothes, but in vain; we drink tea, and then sup with appetites undiminished by fatigue, and to bed about twelve."—P. 92.

Apropos to this we have a kindred anecdote of the journalist himself. Being invited to dine with Sir Thomas Cullum, our excellent friend thought he would improve the opportunity by entomologizing on the road; and accordingly equipped his nether man in leather, as a suitable protection against casualties of wet, mud and brambles; taking care, however, to send, by a trusty hand, a pair of the most immaculate clerical inexpressibles, in which to appear before the ladies at the dinner-table. The parcel containing them duly arrived, and the butler, supposing it to contain plants, immediately handed it over to the gardener, who forthwith judiciously selected a corner in an old uncovered cucumber-frame, and, as he expressed it, "laid it in by the heels." Shower followed shower in rapid succession; Mr. Kirby got drenched to the skin, and he arrived, especially about the legs, in most unpresentable pickle: still, he reflected with satisfaction on his provident foresight, and asked, his countenance irradiate with smiles, for the small brown paper parcel he had so carefully transmitted. But alas! what was his mortification, when he received it dripping from the hands of the servant;—when he found that his best black smalls had been exposed to the same skyey influences as himself, and that it was quite impossible to wear them! He was consequently compelled to borrow of Sir Thomas the required garment, and actually to appear at the dinner-table in the coloured nether integuments of a layman. But to return to the journal.

"My friend was very uneasy about his hapless galligaskins, fearing it to be impossible to restore them to their former hue; my fears were excited by the prospect of a very high bed, and I expect to be lost in a gulph of down, but was agreeably surprised; the feather bed was firm, but not knotty. I did not wake until about 8, and when I opened my eyes and sat up in bed, behold my poor fellow traveller, between hope and despair, bestowing his whole might in cleaning his leathers; at length he succeeds, and they are once more decent, at which his countenance resumes his wonted cheerfulness; he rises, and we descend into our parlour, where a new difficulty awaits us, — our boots were so wet we find more difficulty to get them on than to slip them off: at last, however, without rent or rupture, they resume their destined station upon our legs, and we walk into the town to take a survey."—P. 96.

But really we must proceed to something more entomological than even this entomological excursion. The readers of the '*Zoologist*' are too well acquainted with the '*Monographia Apum*,' to need any information about that extraordinary work, of which it may truly be said, that at the time it was published it was without a parallel for diligent research and careful pains-taking: that it contains many errors; that the sexes of bees, differing widely as they do, were often mistaken for species, was almost a matter of necessity at a time when we stood, as it were, on the very threshold of inquiry; but the plainness and clearness of the descriptions, and above all the masterly anatomical details of the cibarian organs, place the author in the very first rank of entomological investigators, and leave very little for the future labourer in the same field to achieve. Mr. F. Smith, who has paid such unremitting attention to the economy and specific distinctions of British bees, has been able to associate the sexes and varieties with more unerring certainty, and the science of Entomology is deeply indebted to him for the extent and value of his labours; but in structural detail, in those characters which separate modern genera, he has, with all his tact and acumen, added little to the precise details which the illustrious Kirby gave us fifty years ago.

It is a most interesting fact connected with the '*Monographia Apum Angliæ*,' that Latreille, then the first entomologist of the Continent, was working on the same subject, at the same time, and exactly in the same way as its author; and yet, owing to the deadly strife then raging between England and France, the labours of the two entomologists were totally unknown to each other. Latreille's results appeared in one of the supplementary memoirs appended to the '*Histoire Naturelle*

des Fourmis,' and in the same year as the Monograph; it possessed a decided advantage over Kirby's, inasmuch as the numerous divisions indicated by typographical signs by the latter, were raised into genera and accompanied with elegant names by the former. In the technical accuracy of detail, and the profound judgment exhibited in founding the divisions, the merits of the two philosophers are exactly alike.

Byron said, "I awoke one morning and found myself famous," or words to that effect. The same was the case with Kirby. Up to the publication of the 'Monograph,' although his biographer seems to regard him as a hero, and a very Goliath in polemics, he was, in the eyes of that little world who knew of his existence, an amiable and commonplace country clergyman, addicted to pinning bees and popping Dytisci into wide-mouthed phials half filled with spirits of wine: but the 'Monograph' made him another man; it brought him into great and general repute; he rose instantaneously to the pinnacle of entomological fame; not only did his friends at home—Sir James Edward Smith, Sir Thomas Cullum, Marsham the sonorous, MacLeay the elder, and his other brother collectors—shower their congratulations upon his head, but the *savans* of the Continent were prompt to acknowledge his transcendent merits,—Walckenaer, Fabricius, Illiger, Afzelius. We invite especial attention to the following letters, presuming the reader to be perfectly familiar with the passage of the 'Monograph' of which Fabricius, in his most interesting communication, complains.

Fabricius to Kirby: written in English.

Dated March 28, 1803.

"You have declared war against me: I must take up the gauntlet, and fight out the battle as good as possible. You may be sure, had I not found real merit in your work, I would not have written these lines. You attack me generally, you attack me specially, and of both ways I say a few words. The general attack I deny entirely, and I am sure, by cooler observation, you will find, and confess yourself, that your attack is entirely erroneous, and without foundation. Are you not a naturalist?—and these I always found good-natured folk, and honest. You object that I maliciously detract from the merits of Linné. Impossible: there is not in Europe a man who more knows and reveres the first naturalist than I do. I have lived two whole years in his greatest intimacy, and that in the years of early youth, of fancy, and enthusiasm. I have loved him as a father, instructor, friend, and in riper years I have admired his happy flight.

Of his style I have imitated ; but, on the other side, I never flattered him,—never called black white, because he, perhaps by mistake, had called it so. By his real merit, he did not want it. He saw our reverence in our eyes, in the ardour to be with him, in the publique testimony we gave yearly that we only resided at Upsala for his sake. We did not see nor hear any body but him and his family. He loved, likewise, the company of his young friends, as he called us, and every day, in town or on his estate, he came to our room with his pipe, and stayed three or four hours in liberal discourse, but always upon topicks of natural history. He always took our observations, in publique and private, with true benevolence, refuted or reprov'd them, and laughed heartily when we could find ingenious arguments to puzzle him, and now and then he was forced to sit out the dispute till next day. Some dissertations in the *Amæn. Acad.* show his love, and our reverence. These years are the pleasure and the glory of my life. I afterwards corresponded with him 'til death separated our friendship.”

“This letter,” says the biographer, “is of great length, examining in detail all the remarks made upon his system in the Introduction to the ‘*Monographia Apum.*’ Fabricius’s endeavour was to prove that farther enquiry would show that there was not so wide a difference as Mr. Kirby imagined between them, however much his followers and friends might have improperly used his writings.” The letter thus concludes.

“In the special attack I will not defend me much. Many many faults are in my system. I was not able to examine all. The *Co-leoptera* were my favourites, and I neglected now and then the other classes. On my travels, and in the cabinets, I began with the first, and I had not always the time to finish the rest. You have taken up a genus very difficult in itself. Next year I hope to publish the ‘*Systema Piezatorum,*’ and hope you will find it, not perfect, but much bettered.

“After giving you my defence, I wish, without the least animosity, to shake hands and be friends. Do we not go the same way ? and let us not quarrel in the road. I wanted only to wipe my character of ingratitude. In a week I intend to set out for Paris. If you will favour me with some lines, pray address them there to Mons. Latreille, Rue Condé, No. 4. If, as I hope and wish, peace continues, I want very much to return to *Hamburgh* over *England*, and would be happy to make your personal acquaintance. My stay will be short, and I shall be glad if you would come to *London* in that time. My best compliments to all the members of the *Linnean Society*: long I have

wished to write a small paper in their 'Transactions,' but I dare not trust my English, and I have no friend now to mend it. England,—the collections of Messrs. Banks, Drury, Hunter, &c., &c.,—were the cradle of my system, and now the English blame the author. Health and happiness attend you !

"I am, constantly yours,

"J. FABRICIUS."

Afzelius to Kirby.

"Upsala, 8th July, 1803.

"My Dear Sir, — A fortnight ago I received from our friend Mr. Marsham your 'Monographia Apum Angliæ,' which he says he had an order to send as a present from you. For this mark of attention, and for the honour you have done me by calling an insect by my name, as well as by mentioning me in several places in a manner that cannot fail to be very flattering to me, I return you my sincerest and warmest thanks, wishing that I may be able some time or other to show you my acknowledgment more effectually. The work I have but hastily gone through, waiting for more leisure to study it as it deserves. But thus much I can say, that I am highly pleased with the plan you have followed, the pains you have taken, the discoveries you have made, and the manner in which you have treated Mr. Fabricius his tottering system and disorderly arrangement. And it is my hearty wish that your time and health would allow you to undertake another genus, and work it out upon the same admirable plan. Last year I took the liberty of introducing to your acquaintance my worthy friend, Major Gyllenhal. He is the best entomologist we have in Sweden; and, on the hint I have given him, he wishes to come in correspondence with you. . . . If I can be of any service to you in this country, you have only to command, and it will give me the greatest pleasure to be able to perform your wishes.

"If your good lady remembers a foreigner who never forgets the hospitable reception he enjoyed in Barham, in the autumn of 1796, I beg you will give her my best compliments; and as to yourself, be assured, that wishing you health and happiness,

"I remain, Dear Sir,

"Unalterably your obliged friend and servant,

"AD. AFZELIUS."

The following letter, also from Afzelius, shows the progress made by the 'Monographia' in the estimation of Continental entomologists, during the two years intervening between the dates of the epistles.

" Upsala, August 12th, 1805.

" My Dear Sir,—As soon as I received your ' Monographia Apum,' two years ago, I returned you my sincerest thanks for it, and gave it at the same time my full approbation. I then spoke only my own opinion, but now I can tell you the public sentiment, which is everywhere on the Continent in your favour, even amongst the greatest friends of Fabricius. *A plus forte raison*, it is very well received with us; and I have seen it reviewed in more than one place with all the *éloge* such a valuable publication truly deserves. The letter you had the goodness to write to me in the year 1803, and which came in the box accompanied with the insects to Major Gyllenhal, I did not receive before the middle of the last year, and now I thank you very kindly for it. What I have said above may partly serve as an answer to it; and I am very glad to hear that Fabricius himself is so open to conviction, that he acknowledges his faults.

" Herewith I inclose for you some Dissertations, which I beg you will accept; and if you should like to have any more of the same kind, I will do myself the pleasure of sending them, as soon as they are published. Those you may not choose to retain, you may give to any of your acquaintances. But what I feel anxious about is to hear your sentiments upon my ' Achetæ Guineenses,' which I beg you will let me know as soon as possible.

" I am, Dear Sir,

" Wishing you all happiness, your very obliged,

" AD. AFZELIUS."

The biography becomes so involved after the period at which the ' Monographia Apum' was published, that we are unable to reduce it to anything approaching to order or continuous narrative. It abounds with letters, many of them excellent, instructive, and interesting, but they seem to stand greatly in need of arranging and methodizing; indeed, though these letters may often be compared to pearls of price, the connecting thread of material on which they might be strung too often seems to be absent. The author here again appears to pet Mr. Kirby for those very qualities which we think least meritorious, *viz.*, his anti-Bible-Society and anti-British-School prejudices. We are told that on such subjects "none ever wrote in a purer strain of Christian charity than Mr. Kirby." To us it appears that the pure "strain of Christian charity" is not exhibited in this way; and we venture to hope that the anonymous philippics attributed to Mr. Kirby, are, in reality, none of his. Narrow views on any subject do not harmonize

well with the catholicity of Natural History ; and were we ever to detect such in any of our friends, we should no more think of recording them approvingly, than of inviting attention to a limp or to a squint. These prosy observations on prosy pages bring us to the fifteenth chapter, written by one who alone was fitted to be the biographer of Kirby. For such a work Mr. Spence possesses every qualification : — a facility of expression ; a thorough knowledge of the deceased ; a store of four or five hundred of his longest and best letters ; an admiration and love of Kirby as a man and a philosopher ; and lastly, a mind that ignores littlenesses and prejudices of all kinds. Directly we enter on this chapter, we feel that we are in company with a man who understands and appreciates the greatest of our entomologists.

The following note by Mr. Spence, in reference to the numerous letters which passed between himself and Mr. Kirby during their prolonged “friendship of nearly half a century,” is very interesting (and especially so the description of the “Royal Harry”), as illustrating the vast amount of labour bestowed by two congenial minds upon their favourite pursuit.

“These letters, with which Mr. Freeman has furnished me, are between four and five hundred in number ; and those from Mr. Kirby, which I have preserved with as much care as he had mine, are nearly as many. About half of the two series of letters refer almost wholly to Entomology and our book, but a great part of the remainder, exchanged during my eight years’ travels and residence on the Continent, and after my return to England, are more occupied with accounts of our tours, &c., and of domestic matters. Our entomological letters, in those days of dear postage, were mostly written on sheets of large folio paper, so closely, that each would equal a printed sheet of sixteen pages of ordinary type. These we called our ‘first-rates,’ or sometimes ‘seventy-fours,’ the few on ordinary-sized paper being ‘frigates ;’ but one I find from Mr. Kirby, which he calls the ‘Royal Harry,’ written on a sheet nearly the size of a ‘Times’ Supplement, and closely filled on three pages, and which he begins and concludes thus : — ‘Barham, March 23, 1816. My Dear Friend,—This doubtless will be the greatest rarity in the epistolary way that you ever received. I hope it will long be kept among your *κειμήλια* and be shown, not as a black, but as a black and white swan, which since the discovery of the former in N. S. W., must be held as the true *rara avis*. . . . And now, having manned this *Royal Harry* with as large a complement of men as I could muster, I shall launch her. I question whether ever one of equal tonnage before crossed the Humber.’ With

the love of order which Mr. Kirby's study of Natural History had so deeply implanted in him, all my letters are folded across the sheet, so as to be of the same breadth of about two inches, and have an index on the back of each, referring to the various subjects (often 15 to 20) of the letter, which he marked in it by large figures in brackets, so as readily to catch the eye; and they were then docketed with red tape into a packet for each year."—P. 265.

The acquaintance thus commenced:—

"Chancing one evening in August, 1805," says Mr. Spence, "when walking on the Humber bank, to meet my friend George Rodwell, Esq., then a resident at Hull, he told me he was about to visit Barham in a few days, and said if I had any insects to send to Mr. Kirby he should be happy to convey them. This offer I gladly accepted, and prepared a box, which was taken by Mr. Rodwell, along with a letter, which is placed first in Mr. Kirby's packet of mine of 1805, and which it is necessary to give here to make his reply intelligible."—P. 266.

We omit the correspondence; in order to make room for the following account, from the pen of Mr. Spence, of the share of each author in the production of the 'Introduction to Entomology,' the idea of which originated with that gentleman.

"In our Preface, p. xxi. [Here, and throughout this chapter, the 5th edition (1828) is referred to] we have declined stating which Letters were written by each; and in the thirty-seven years which have elapsed since we 'excused ourselves from gratifying the curiosity' to ascertain this fact (if any such were ever felt), no clue to it has been given, except the disclaimer by Mr. Kirby, in the advertisement to our third and fourth volumes, of agreeing with me in opinion on the theory of instinct in the Letter on that subject, Vol. ii., and the remarks, in Vol. iv. p. 19—33: both, as he wished it to be stated, written by me.

"As this disclaimer, however, has broken the charm of secrecy, and as some future ingenious entomologist may think it worth his while to endeavour, from internal evidence, still further to solve the mystery, in attempting which he would be sure to fall into gross errors, it has seemed to me best (and Mr. Freeman coincides with me) to give here the entire list of the Letters of our work which were ultimately agreed on, and which vary in some respects from that proposed above, with the name of the writer affixed to each, and such observations as are necessary to make the information correct and complete.

VOL. I.

“Preface.—Mr. SPENCE.

[The two paragraphs relative to the religious bearing of the work (p. xiii. and xiv.); the first half of one at p. xvi., beginning ‘The authors, &c.,’ and one at p. xviii., beginning ‘Besides these, &c.,’ were added by Mr. KIRBY.]

“LETTERS.

I.—Introductory. Mr. KIRBY.

II.—Objections answered.

The first part, to p. 39. Mr. KIRBY.

The second part, in defence of Systematic Entomology, p. 40—53. Mr. SPENCE.

The concluding part as to cruelty. Mr. KIRBY and Mr. SPENCE.

III.—Metamorphoses. Mr. SPENCE.

[From p. 72 to 77 by Mr. KIRBY.]

IV. to VIII.—Injuries caused by insects. Mr. KIRBY.

IX. and X.—Benefits derived from insects. Mr. KIRBY.

[A large proportion of the facts, and several entire paragraphs and pages in these seven letters, were furnished by Mr. SPENCE.]

XI.—Affection of insects for their young. Mr. SPENCE.

XII. and XIII.—Food of insects. Mr. SPENCE.

XIV. and XV.—Habitations of insects. Mr. SPENCE.

VOL. II.

“LETTERS.

XVI. to XX.—Societies of insects. Mr. KIRBY.

XXI.—Means by which insects defend themselves. Mr. KIRBY.

XXII. and XXIII.—Motions of Insects. Mr. KIRBY.

XXIV.—Noises produced by insects. Mr. KIRBY.

XXV.—Luminous insects. Mr. SPENCE.

XXVI.—Hybernation and torpidity of insects. Mr. SPENCE.

XXVII.—Instinct of insects. Mr. SPENCE.

VOL. III.

“LETTERS.

XXVIII.—Definition of the term insect. Mr. KIRBY and Mr. SPENCE.

XXIX. to XXXII.—States of insects. Mr. KIRBY and Mr. SPENCE.

[These four letters were originally assigned to Mr. Spence, and rough copies of them were prepared by him, extending to 120 pages of MS. in large 4to.; but, owing to his ill health (as explained in the advertisement to Vol. iii.), the accumulation of new matter required the whole to be prepared for the press by Mr. Kirby.]

XXXIII. to XXXVI.—External anatomy of insects. Mr. KIRBY and Mr. SPENCE.

[This department of the work, as has been previously here explained, and in the advertisement to Vol. iii., was that to which the authors, both during Mr. Spence's visits to Barham and in their long subsequent correspondence, mainly devoted their attention; and the tabular view of the parts of insects was the very first portion of the work drawn up by them as the result of their joint examination of a great number of insects of all orders, and of long discussions (both orally and by letter) as to their homological relations: but the more extended and connected survey of the whole subject contained in these letters was drawn up by Mr. Kirby.]

VOL. IV.

"LETTERS.

XXXVII. to XLIII.—Internal anatomy and physiology of insects. Mr. KIRBY and Mr. SPENCE.

[The explanation given above as to the Letters on the states of insects, applies equally to these seven Letters on their internal anatomy and physiology. They were originally assigned to Mr. Spence, whose rough draughts of the letters fill 125 MS. 4to. pages; but it was necessary, in consequence of his ill health, that the whole should be prepared for the press by Mr. Kirby, so as to incorporate the new facts with those which Mr. Spence had collected.]

XLIV.—Diseases of insects. Mr. KIRBY.

XLV.—Senses of insects. Mr. KIRBY.

XLVI.—Orismology, or explanation of terms. Mr. KIRBY and Mr. SPENCE.

XLVII.—System of insects. Mr. KIRBY.

XLVIII.—History of entomology. Mr. KIRBY and Mr. SPENCE.

XLIX.—Geographical distribution of insects, &c.

The first part, on general geographical distribution, by Mr. KIRBY; the remainder by Mr. KIRBY and Mr. SPENCE.

L. — Entomological instruments, &c. Mr. KIRBY and Mr. SPENCE.

LI.—Investigation of insects. Mr. KIRBY and Mr. SPENCE.

Appendix.—Mr. KIRBY.

[An enumeration of entomological works, and of papers in Transactions, Journals, &c., drawn up by Mr. Spence, and extending in MS. to 126 pages large 4to., was unavoidably omitted, owing to the much greater bulk of the work than had been originally calculated on.]

“I beg to conclude this long note, which assigns to each, as far as practicable, his share in the work, with a repetition of our desire, expressed in the Preface,—and which I know was Mr. Kirby’s as much as mine,—that in any reference to our work we may be always jointly referred to, with two exceptions: these are — 1st. The Letter on instinct (Vol. ii.), and my farther remarks upon this subject (Vol. iv. p. 19—39), on which Mr. Kirby differed in opinion from me, as he has stated in the advertisement to Vol. iii., and for taking which different view from mine he has given his reasons at large in the Bridgewater Treatise (Vol. ii. p. 222—280); and 2nd. The Letter on hybernation (Vol. ii.), in which the denial of the possibility of satisfactorily explaining the retreat of insects to their winter quarters, and often the preparing of these previously, from the mere direct sensation of cold, I think it due to him to state (though he did not himself care to advert to it in the advertisement above quoted) was in opposition to his opinions on the subject, and no portion of this Letter, nor of that on instinct, was written by him. With these slight exceptions, no reference to our book can ever be justly made except in our joint names; for the chances are, that even in the Letters here stated to have been written by one of the authors, the particular facts or observations referred to (often extending to whole paragraphs and several pages) may have been supplied by the other, as perpetually occurs. It was, indeed, next to that of criticising and perfecting our anatomical and orismological terms, expressly for the purpose of thus adding to the stores of his coadjutor, that the greater part of the long letters that passed between us, during the extended period employed in the composition of the work, amounting in quantity of matter, if printed, to far more pages than its four volumes, were written by each. In fact, there probably never was a work, composed by two authors, more thoroughly *dove-tailed* with the contributions of each, than ours. Our book was always in our thoughts; and our reading, even on dissimilar subjects, was constantly furnishing facts, or hints, or illustrations,

bearing on the portions of each other, which were duly noted and transmitted, and most generally adopted : and, if it have merit, this is in a great degree owing to its being what it professes to be — a really joint production of two variously-instructed minds, anxious only to contribute to the perfection of their labour of love,—for such the work truly was to them,—during the many years it occupied them.”—P. 307.

The letters interchanged between Mr. Kirby and Mr. Spence are generally of a technical character, yet abounding throughout with agreeable pleasantries and the milk of human kindness. The following passage, in reference to Bernard Barton, is particularly worth preserving, as being creditable alike to the poet and to the entomologist. It exhibits no trace of little-mindedness — nothing approaching religious intolerance. It occurs in the letter wherein Mr. Kirby tells his friend of the “happy and pleasant party” got up by his parishioners to celebrate the fiftieth year of his residence at Barham.

“Bernard Barton, the Quaker poet, a very friendly Friend, who before addressed some very pretty verses to me, inserted in our provincial paper a very beautiful address to me, but above my deserts, but which showed great liberality on his part to eulogize a receiver of tithes, and to acknowledge him as a Minister of the Gospel.”—P. 321.

Indeed, throughout Mr. Spence's chapter, Kirby appears as the liberal-minded, kind-hearted Christian ; and we again repeat our regret that his history was not altogether entrusted to such a biographer.

The appearance of the ‘Introduction,’ the most successful scientific work ever published, while it confirmed the high position Mr. Kirby had already attained, overwhelmed him with new correspondents, amongst whom were men of considerable powers of observation, and intense love of Nature ; such in particular is William Holme, of Preston, of whom little information appears to have reached the present day, and whose memory will perhaps be preserved from entire oblivion, by his letters now forming part of a Memoir of Kirby.

With regard to Mr. Kirby's own works, we have little to say. The republic of naturalists has pronounced an unanimous verdict in their favour : they invariably bear the marks of great care and patient study : and vast as is their bulk taken collectively, they were produced slowly, and at considerable intervals. Mr. Kirby neither possessed the power for rapid production, nor the wish to produce rapidly : everything he undertook he performed in the most methodical and careful manner, neither hurrying nor procrastinating. The following passages from the Memoir are selected as exhibiting pleasing traits in the character of this great and good man.

"Sunday at Barham Parsonage was always a day of cheerfulness ; there was nothing to cast a shade or gloom upon it ; it differed from all other days, and was stamped with a mark peculiar to itself : this, however, was not the badge of a slavish yoke, but the stamp of a cheerful dedication. Entomology, notwithstanding the connexion it ever had with religion in his mind, and the extent to which it was interwoven in his sermons, was never pursued in any way whatever on this day of rest. There was danger, in his view, of its engrossing the mind ; and, however innocently, or even profitably, the eye might wander over the treasures of his drawers, he considered that there was something due in the way of example towards the members of his household, which he would not withhold.

"The arrangement of his time was with Mr. Kirby a matter of forethought and consideration. The following may be taken as the division ordinarily adopted at the time when he pursued Entomology with the greatest vigour : —

"The time before breakfast was devoted to reading portions of Scripture in Greek or Hebrew. After breakfast, one of the Fathers until noon, with a classical author on alternate days : this was followed by exercise until an early dinner. The afternoon was devoted to Natural History, and the evening to miscellaneous reading, correspondence, &c., &c. Wednesday and Friday were devoted to systematic visitation in his parish.

"These rules were observed with great accuracy for a very long period of his life : latterly his custom was to read the New Testament in Greek after breakfast (which he always did aloud), and it was rarely that this was neglected.

"It is by no means an uncommon circumstance to find that men who have acquired great celebrity have abridged the hours of sleep ; this was not the case with Mr. Kirby ; his hours were observed with great regularity, and his habit was to rise early, and retire at a reasonable hour to rest. He never encroached upon the period of repose, which, by experience, he found essential to the well-being of mind and body. There are, indeed, to this some notable exceptions to be made ; for more than one entomologist can tell of Mr. Kirby's zeal and energy in pursuit of his science by night, — not, however, by the light of the midnight oil, but with that of a common lantern, visiting, at some distance from the Parsonage, the oak woods, to ascertain, if he could, the proceedings of the insect world ; more especially being curious to know whether the *Formica rufa* really carried on its operations by night. Upon this point, accompanied by Mr. Spence and Mr. John

Curtis, he was fully and entirely satisfied, as he had the gratification of witnessing their labours after the hour of midnight."—P. 485.

* * * * *

"Mr. Kirby possessed, as we have already noticed, a remarkable power of fixing his undivided attention upon any subject which was before him, and with great facility withdrawing it completely, and fixing it with an equal degree of intensity upon any other subject, however different in its nature. Nor was this confined merely to matters of study; it was his habit from early life to take a given proposition; and think upon it for a certain fixed time, forcing his mind back to it whenever it was disposed to wander, raising up to himself imaginary opponents bringing forward arguments against him, and thus viewing the matter in all its bearings. This power never forsook him, for in later life, when he was prevented taking his usual walk, he would employ an hour in this way, walking up and down his room."—P. 491.

* * * * *

"Until a very short time before his death, Mr. Kirby never went to bed without pausing before a picture of his mother which hung upon the landing; and frequently would he be heard soliloquizing upon her many good qualities, and giving vent to feelings of affection and tender regard for her memory."—P. 492.

* * * * *

"At one time Mr. Kirby kept bees, and was an accurate observer of their habits: when or why he gave them up I do not know. Latterly his only domesticated pets were his cats, of which he was exceedingly fond: they were also associated in his mind with older times, his father having been fond of them, and having received the self-same breed, from which the Barham cats came, from his grandfather. They were certainly an unusually fine breed, and enjoyed great indulgence. If their claws pierced his silk stockings, for which his adherence to the custom of the last century afforded considerable facilities, even though the rough token of friendship occurred again and again, yet it never produced more than a playful remonstrance. While engaged in writing, *Frolic* would often play with his pen from her favourite post, his shoulder; but even this would not disturb his tranquillity."—P. 494.

* * * * *

The last act of Mr. Kirby's public life, was the opening of the Norwich Museum. The lamp of life had burned very low, and was flickering in its socket; but he could not resist our friend Ransome's invitation to be present on this occasion, as it seems the consumma-

tion of an object he had so long and so ardently desired. The following record of the proceedings is deeply and touchingly interesting:—

“The Bishop of Norwich* took the chair upon the occasion, and Mr. Kirby, the venerable President, occupied a seat upon his right hand: he evinced great interest in the opening address, as well as in the report of the Secretary; an expression of delight was manifested when that part of the report was read which announced that ‘the institution was believed to be the first established in Britain, for the especial purpose of promoting the study of Natural History among the working classes:’ indeed, throughout the whole of the proceedings, whenever allusion was made to this subject, he signified by a subdued expression of applause his cordial approbation.

“None who were present on the occasion can ever forget his rising to second one of the resolutions; a task assigned to him, that he might not feel it incumbent upon him to address the meeting: so heartily, however, did he enter into the whole scheme, and so anxious was he to give vent to his feelings in the same strain which he had in his writings ever adopted, that he made the attempt, and said, — ‘These cases that you see before you are filled with the works of God, — He made them all, — He is great, — He is wise, — He is good.’ The effort proved too severe, — the mind had been strained to the highest pitch, — his whole conception had been embodied in these few short sentences, and no power remained to descend to any matter subordinate to the great truth to which he desired to give utterance. Mr. Kirby could proceed no farther, and at the suggestion of a friend resumed his seat. After a momentary and affecting pause, the worthy Bishop, with that promptness which was so peculiarly characteristic, rose and said, — ‘This resolution has been proposed, and seconded with more than words by the Reverend and excellent Mr. Kirby; his silence gives a double force to the seconding the resolution, and I trust the few words he did speak, pregnant with good feeling, pregnant with devotion, overflowing with religion, will never be forgotten by those who heard them.’

“At a later period of the proceedings, the Bishop of Norwich, in terms of eulogy, proposed a vote of thanks to their venerable President for his attendance; when he turned to Mr. Kirby, and addressed him personally. The latter, with unaffected grace, rose and stood in a posture of humility and respect, while he listened to the words of enthusiastic praise, and received the most hearty good wishes for his

* Dr. Stanley.

happiness in that eternal state to which in the course of nature he was approaching. Mr. Kirby resumed his seat, and after a short pause in a scene most affecting, he rose again to express his acknowledgment:—‘I beg to return my sincere thanks for the kind notice your Lordship has been pleased to bestow upon me. I am a poor old man. I look forward with trust and hope. It cannot be long before I shall go, and I trust that I shall be happy. May God bless you all! May you all have the same hope when you die, that I hope to have! God bless you all!’—P. 502.

And here we must conclude a notice which has been prolonged beyond all precedent, because the subject is beyond all precedent interesting: and much as we dislike the occasional tone of the author; clumsy and unconnected as is his narrative; yet we pronounce it a work that will of necessity command a large circulation, and will have a tendency to improve and instruct those who read it. The Kirby correspondence abounds in the richest ore, but requires to be washed and sifted; and this task, which has been neglected by the author, now devolves upon the reader. An Index also is much required, enumerating the principal subjects, and the authors of all the correspondence.

K.

*The Search for Franklin.**

THE public press has kept alive the interest in the fate of Sir John Franklin with a remarkable and praiseworthy perseverance. Scheme after scheme has been projected, some with, some without, the most remote chance of success. Unanimous as is the verdict both of mariners and scientific geographers of the utter inutility of a north-west passage, if discovered, it is equally unanimous in deciding that every reasonable effort should be made to discover whether those who have perilled life in seeking it are still living; and, if living, to restore them to their homes. On the part of the government, or perhaps, more rigidly speaking, on the part of those who receive government pay and command our ships of war, there has been a general coolness and listlessness that is difficult to account for, and impossible not to condemn. The evidence published of the expedition under Austen, exhibits a far greater amount of jealousy and petty persecution of the

* ‘The Search for Franklin, a Suggestion submitted to the British Public.’ By AUGUSTUS PETERMANN. London: Longmans. 1852.

brave and enterprising Penny, than of ardour in the cause for which it was fitted out: and so on other occasions; no sooner was hope for a moment raised by the discoveries made, or the opinions expressed, by any one in the merchant service, than a royal-navy man of authority was sure to come forward and damp those hopes, by attempting to throw discredit on the discoveries, or to ridicule the opinions as ill-founded. It is our own impression that Franklin still lives,—that the ships seen by the ‘Renovation,’ and again by the Dutchman, on the ice-berg, were none other than the ‘Erebus’ and ‘Terror,’ forced up high on the ice, and in all probability utterly disabled. Under such circumstances, the crews would establish themselves on the ice for a time, and eventually on land. Exactly such a course of events took place in the third voyage of William Barentz, in 1596; and if any argument was required to prove the utter hopelessness of obtaining any beneficial result from these perilous expeditions, it is abundantly furnished by the fact, that with all our improved skill we have made no advance during 250 years. It will be obvious to all who glance at a map of the arctic regions, that while the sea is confined to comparatively narrow channels to the *westward* of Greenland, and passing up Baffin’s Bay towards Wellington Channel, it is remarkably open to the *east* of Greenland. In this direction, and passing between Greenland and Spitzbergen, Parry, in 1827, reached the high latitude of 82°; whereas Penny, sailing through Baffin’s Bay, only reached 76°, and Collinson, through Behring’s Straits, only 73°. Now it appears from the concurrent testimony of all arctic voyagers, that a vast open sea exists to the north of all the latitudes yet reached; and it is the opinion of the learned Professor Ermann, that this sea is never frozen. Looking at the map, how very obvious does it appear that the way to reach this sea, and therefore the way to search the polar regions, is by sailing almost directly north from the mouth of the Thames, steering eastward through the immense opening between Spitzbergen and Nova Zembla. It has been said, but without sufficient authority, that a belt of ice extends between these inhospitable islands; but it is well known that these belts of ice are movable, that they shift with winds, seasons, currents, &c.; and nothing is more probable than that, if such a belt exist during the summer months, it is the result of combined ice-bergs detached by increased temperature from the northern lands of the eastern hemisphere, and that it would disappear entirely in the winter. It is a self-evident fact, that if Franklin has lost his ships in the manner suggested, that he must be confined to this sea or its islands, until help reach him from home: even with

the extraordinary example of Barentz, who, after abandoning his ship, contrived to reach Lapland in open boats, a feat unexampled in the history of navigation, he would never attempt so fool-hardy an enterprise. The question as to subsistence during six, or, indeed, any number of years, is practically settled by the certain knowledge we possess, that the highest northern latitudes abound in animals, and the farther our researches have extended, the more does the land, the sea, and the air, appear to teem with life.

The difficulty of passing Cape Taimure, the most northerly point of Asia, has been strongly urged by Captain Beatson, who projected an expedition through Behring's Straits; but this difficulty has evidently arisen from the disposition to keep near shore,—of course a principal object in all surveys. When neither surveying nor discovery is the object to be obtained, there can be no objection to steer far north of that obstacle through the open water of the Polynia, and perhaps sailing over the pole itself, where constant daylight, probably accompanied by a moderate temperature, lasts from the 21st of March to the 23rd of September. An expedition to be effectual should be steamed. The movements of ice, and directions of currents, having been calculated from previous observations, two or three powerful steamers should perform the passage in the shortest possible time. The speed, and above all, the tractability of a steamer, would enable her to thread her way through a sea of moving ice-bergs, among which a sailing vessel would be useless; and having passed the supposed ice-belt, and reached the Polynia, nothing would remain but a six months' search in an agreeable temperature, and in perpetual daylight. This would set the matter at rest; such a search would satisfy every reasonable mind, whatever its result, for if we cannot succeed, it is ever a satisfaction to know that every human effort has been made to obtain success.

An important element in the success of such an expedition, is the assumed truth of the theory which we believe was first propounded by Mr. Petermann, that an entrance into the polar Polynia may be much more easily effected in winter than in summer. To us this seems sufficiently plausible, from the facts which this enlightened geographer has adduced leading, without exception, to this conclusion; such, for instance, as the known packing of the ice in shore during winter, and its wandering propensities during summer: moreover, it seems to be definitively settled, that many of the arctic currents are revolving currents, flowing southward from the pole during summer, northward towards the pole during winter. It is a very remarkable circumstance,

and strongly in favour of Petermann's proposition, that Admiral Lutké, who surveyed the island of Nova Zembla, in the years 1821—4, found the sea perfectly free from ice on the 21st of August, as far northward as the eye could reach, the southward currents, together with the prolonged influence of the sun, having carried southward or melted the whole of the ice-bergs.

The plan devised by Lieutenant Pim, whose energy and enthusiasm in the cause contrast advantageously with the apathy displayed in other quarters, was much in accordance with this of Petermann's; but we see no advantage whatever in sailing from the Siberian coast; we think that rapid transit by steaming direct from the mouth of the Thames, possesses every advantage over a tedious journey overland.

We shall, in conclusion, give a series of extracts from the Journal kept by William Barentz, a Dutchman, of whom we have already spoken. He was in search of a north-eastern passage to China, and compelled to winter at the north-eastern coast of Nova Zembla, in the season of 1596-7. The extracts are selected by Petermann, and with particular objects; one of the series is to show the state of the Arctic Ocean as regards ice, &c., during the period in question; another series (that which we quote) is designed to give an idea of the means of sustenance in these high northern latitudes.

" II.—EXTRACTS FROM WILLEM BARENTZ' THIRD VOYAGE,

Showing the *Means of Sustenance* found by that Expedition while wintering at the north-eastern extremity of Novaia Zemlia, 11 September, 1596, to 13 June, 1597; with incidents respecting the killing of animals.

" 11 September.—Determined to build a house vpon the land, to keep vs therein as well as we could. . . . Found certaine trees, roots, and all which had been driven vpon the shore. . . . That wood served vs not onely to build our house, but also to burne and serve vs all the winter long.

" 14 September.—Went into the land, and laid the wood in heaps one upon the other, that it might not be covered over with ye snow.

" 15 September.—In the morning, as one of our men held watche, wee saw three beares, whereof the one lay still behind a peece of ice, the other two came close to the ship: which wee perceiving, made our peeces ready to shoote at them, at which time there stod a tub full of beefe, vpon the ice, which lay in the water to be seasoned, for that close by the ship there was no water: one of the beares went

vnto it, and put in his head to take out a peece of the beefe, she was shot into the head, wherewith she fell down dead, and never stir'd: the other beare stood still, and lokt upon her fellow, and when she had stood a good while she smelt her fellow, and perceiving that she was dead she ran away."

[This bear they attacked with "halberds and other arms," but did not succeed in killing. The dead bear they opened, and then "set her vpon her fore feet, that so she might freeze as she stood," intending to carry her with them into Holland.]

"27 October. — That day our men killed a white fox, which they flead: and after they had rosted it, ate thereof, which tasted like conies flesh. The same day . . . we hung up a lamp to burn in the night time, wherein we used the fat of the beare.

"2 November.—One of our men killed a fox with a hatchet, which was flead, rosted, and eaten: before the sunne began to decline, wee saw no foxes, and then the beares vsed to go from vs."

[From November 4 to January 24 the sun was below the horizon.]

"27 November. — We made more springes to get foxs, for it stood vs vpon to doe it, because they served vs for meat, as if God had sent them purposely for vs, for we had not much meate."

"21 December.—Clened our traps for the foxes, which did us great pleasure when we tooke, for they seemed as dainty as uenison vnto us.

"25 December.—Being Christmas day, it was foule wether, with a north-west wind; and yet, though it was foule wether, we hard the foxes run ouer our house, wherewith some of our men said it was an ill signe; and while we sate disputing why it should be an ill signe, some of our men made answere, that it was an ill signe because we could not take them, to put into the pot to rost them, for that had beene a very good signe for vs."

[January 5, being "Twelf Even," was celebrated as a high festival, with wine, and cake, and other dainties: "and so," says the narrator, "supposing that we were in our owne country, and amongst our friends, it comforted vs as well as if we had made a great banket in our owne house: and we also made tickets, and our gunner was king of Nova Zembla, which is at least two hundred miles long, and lyeth betweene two seas."]

"21 January.—It was faire weather, with a west wind: at that time taking of foxes began to faile vs, which was a signe that the beares would soone come againe, as not long after we found it to be true; for as long as the beares stay away, the foxes came abroad, and not much before the beares came abroad, the foxes were but little seen.

"12 February.—[Killed a bear], flead her, and took at least one hundred pound of fat out of her belly, which we molt, and burnt in our lampe. This grease did us great good servuice, for by that meanes we still kept a lamp burning all night long, which before we could not doe for want of grease, and every man had a lamp in his caban. . . . The beares skin was 9 foote long and 7 foote broad."

List of the Arrival and Departure of the Migratory Birds, as far as observed, near Weston-on-the-Green, Oxfordshire, during 1851.—

<i>Arrival.</i>			
Chiff-chaff	- - -	April 2	Whinchat - - - May 9
Willow Wren	- - -	14	Swift - - - 10
Black-cap	- - -	14	Red-backed Shrike - 15
Swallow	- - -	16	Turtle Dove - - - 16
Grasshopper Warbler	- - -	16	Hobby - - - 19
Redstart	- - -	17	Land Rail - - - 20
Spotted Flycatcher	- - -	18	Great Plover - - - 20
Wryneck	- - -	18	Snipe - - - Sept. 4
Martin	- - -	19	Great Snipe - - - 12
Cuckoo	- - -	19	Jack Snipe - - - Oct. 10
Nightingale	- - -	19	Merlin - - - 23
Whitethroat	- - -	20	Fieldfare - - - 27
Sedge-bird	- - -	22	Woodcock - - - 28
Yellow Wagtail	- - -	23	Red-wing - - - Nov. 3
Lesser Whitethroat	- - -	25	Gray Shrike - - - Dec. 18

<i>Week in which last seen.</i>			
Red-wing	- - -	March III.	Blackcap - - - I.
Fieldfare *	- - -	IV.	Turtle Dove - - - III.
Snipe	- - -	April IV.	Whitethroat - - - III.
Cuckoo	- - -	July IV.	Tree Pipit - - - October I.
Swift	- - -	August II.	Yellow Wagtail - - - II.
Whinchat	- - -	Septemb. I.	Swallow - - - III.
Spotted Flycatcher	- - -	I.	Martin - - - III.
Redstart	- - -	I.	

—A. Matthews; *Weston-on-the-Green, May 31, 1852.*

Occurrence of various Birds at Weston-on-the-Green in 1851.—The last twelve-month was, in this part of the kingdom, very unproductive of ornithological events: with the exception of the following, some of which have already appeared in your pages, nothing has come to my knowledge worthy of note. On the 20th of February a

* Fieldfares were occasionally seen until the middle of April, passing over this place towards the north-east, at a great height in the air.

black tern (*Sterna nigra*) passed over this place, flying N.E. Two specimens of the male peregrine falcon (*Falco peregrinus*) were killed near Oxford in the beginning of April; and in the same neighbourhood a young shag (*Phalacrocorax cristatus*) occurred in January. This bird was shot while swimming in a pool of water adjoining the Great Western Railway, and close to the town. About the same time as the last, a fork-tailed petrel (*Thalassidroma Leachii*) was obtained in the usual manner, that is, found dead, in Blenheim Park. And on the 12th of September a female of the great snipe (*Scolopax major*) was shot in the Botley gravel-pits near Oxford. Owing to the dry weather which prevailed so long towards the end of autumn, snipes and all kinds of wild fowl have been unusually scarce. During the whole winter I met with but one teal, and very few ducks, and have not so much as heard of a wild goose making its appearance.—*Id.*

Note on the Mouse-catching Propensities of Xema ridibundus.—A large colony of brown-headed gulls nest every year at Scoulton Mere in this county, and are known to have done so for the last two hundred years, as they probably may have done for a still longer period. I am told that when a stack of corn is taken down in any of the fields in the neighbourhood of this breeding-place, many of the gulls assemble round the spot, and if not disturbed, devour the mice that have been killed during the process, and also capture a great many of those which have escaped into the adjoining hedge-rows.—*J. H. Gurney; Easton, Norfolk, July 21, 1852.*

Mode of the Tree Frog changing its Skin.—The readers of the 'Zoologist' are probably aware that many years ago I discovered and described the mode in which toads cast their skins and swallow them. I do not know that it has hitherto been noticed that the tree frogs (*Hyla viridis*) employ the same mode of disposing of their left-off garments; but of this I have had repeated demonstration.—*T. Bell; Selborne, July, 1852.*

Insects impaled on Thorns.—In reference to the query of your correspondent, Mr. A. R. Hogan, respecting insects being found impaled on thorns, I observed in travelling through North Wales a few years since, several Coleopterous insects (the common cockchafer being the most abundant) and humble-bees impaled, some alive and some dead, and near them the butcher-bird, I think the red-backed shrike, which leaves no doubt in my own mind as to the cause of the impalement.—*Charles Muskett; Norwich, June 1, 1852.*

Varieties of Arctia Caja.—Among a number of varieties of this moth, I have bred three perfect specimens, two of which, male and female, came forth July 5, and the third, a female, July 8, with their bodies and under wings of a beautiful yellow colour, with the ordinary dark markings; the upper wings are of the usual colour.—*C. H. Longley; Eaton Place, Park St., Oxford St., July 14, 1852.*

Capture of Diphthera Orion.—I have great pleasure in informing you that during the present month I have had the good fortune to take five specimens of this rare and splendid moth.—*H. Cooke; Hastings, June 19, 1852.*

Proceedings of the Entomological Society.

July 5, 1852.—J. O. WESTWOOD, Esq., President, in the chair.

The following donations were announced, and thanks ordered to be given to the donors:—‘The Zoologist’ for July; by the Editor. ‘The Literary Gazette’ for June; by the Publishers. ‘Transactions of the Linnean Society,’ vol. xxi., part 1: ‘Proceedings of the Linnean Society,’ 1851, Nos. 45, 46, 47: ‘List of the Linnean Society,’ 1851; all by the Society. ‘Exotic Butterflies,’ by W. C. Hewitson, part 3; by W. W. Saunders, Esq. ‘Entomologische Zeitung,’ May and June; by the Entomological Society of Stettin. ‘Ueber die Lebensweise der Termiten und ihre Verbreitung,’ von Dr. H. Hagen; by the author. ‘Bericht über die wissenschaftlichen Leistungen im Gebiete der Entomologie während des Jahres 1849,’ von Dr. H. Schaum. Berlin, 1851; by the Author. ‘Proceedings of the Royal Society,’ vol. vi. No. 87; by the Society. ‘Ædes Hartwellianæ, or Notices of the Manor and Mansion of Hartwell,’ by Captain W. H. Smyth, R.N., F.R.S., &c. London, 1851; presented by Capt. Smyth and Dr. Lee, F.R.S., &c. ‘A List of the British Fossorial Hymenoptera;’ by S. Bagster, Esq. ‘The Athenæum,’ for June; by the Editor. A fine specimen of *Lucanus Cervus*, brought from the Pyrenees by W. D. West, Esq.; by D. W. Mitchell, Esq., Sec. Z.S. Bred specimens of *Halias clorana*; by A. F. Sheppard, Esq. Two specimens of *Diglossa mersa*, taken on the 26th of June, on the coast at Baldoyle, near Dublin; presented by the captor, A. R. Hogan, Esq. Cocoons of silk from the north of China, and specimens of *Apaté Bambusæ*, *Spence*, *MSS.*; by Mr. Douglas.

Henry Haseldine, Esq., 25, Whitehead's Grove, Chelsea, was elected a Subscriber to the Society.

Mr. E. W. Janson, on the part of A. R. Hogan, Esq., exhibited a Lepidopterous larva, from the segments of which proceed several elongate fungus-like excrescences, and concerning which Mr. Hogan communicates the following:—

“All the account I can give you of this singular creature is, that having found it some time last winter (in January, I think) when I was busily engaged with other matters, without identification or examination I threw it into a chrysalis-box which contained both moss and clay; in the former of these it disappeared, and I saw nothing more of it, till on preparing to start for England in May last, I cleared out the box, and found it dead, precisely in the state you will now see.”

Mr. Douglas exhibited a bamboo fan, one of a case-full imported from China two or three years since, and all of which were now found to be eaten through and through by *Apaté Bambusæ*.

The Secretary announced that the annual field-day meeting of the Society was held at Mickleham on the 26th of June; when captures of several rare insects were made, some of which he exhibited.

Mr. Douglas exhibited the curious larva-case of *Tinea prolella*, found by him on the 9th of April at West Wickham Wood, feeding on *Geum urbanum*. He also exhibited specimens of a new *Lithocolletis*, which he proposed to call *L. Scabiosella*, having found the larvæ mining the radical leaves of *Scabiosa Columbaria*, growing at the side of the old train-road beyond Croydon.

Mr. F. Grant exhibited *Diphthera Orion*, recently captured by sugar in the New Forest; also specimens of the rare *Coleophora solitariella*, Zell., bred from *Stellaria holostea*, and *C. albitarsella*, bred from *Glechoma hederacea*.

Mr. S. Stevens exhibited a living larva, in its case, of the rare *Coleophora conspuella*, taken at Headley Lane, on *Centaurea nigra*? It was black, shining, and in shape like the case of *C. albitarsella*, but double the size. He also exhibited a specimen of the rare *Pachetra leucophæa*, taken flying on Mickleham Downs two days previously.

Mr. C. S. Gregson exhibited a number of *Lepidoptera* taken in the north of England; among them were *Ceratopacha fluctuosa*, *Macaria notata*, a new species of *Tineidæ*, and some beautiful specimens of *Crymodes Templi*, found among heaps of iron-stone, where they sheltered during winter, and where they were found on removing the lumps, between the months of October and February.

The President, on the part of Mr. Spence, read the following extract of a letter from G. H. K. Thwaites, Esq., dated Peradenia, Ceylon, May 7, 1862:—

“Last night, while I was sitting with all my windows and doors open, to enjoy the coolness during a shower of rain, a *Pausus* flew upon my white coat, and to my surprise, when I laid hold of him, he crepitated slightly, and there was an evident sensation of heat felt by me. The odour given off was most pungent and ammoniacal, and made my eyes water when he was brought close to them. I inclose a mutilated specimen of the same species of *Pausus*, which I found on the floor a short time ago, so that Mr. Westwood will be able to identify the species.”

The species referred to is *Cerapterus Westermanni*.

The Secretary read the following note:—

“The ‘*Milan Gazette*’ of the 18th of June states that ‘a woman named Theresa Ramos has discovered and proved by actual practice, that the plant *centinode* is quite as good nourishment for silkworms as the mulberry-leaf, and that by its means she had reared them in sixteen days only. It appears, however, that silkworms which have already tasted of the mulberry-leaf will not take to the *centinode*.’”

The Secretary read the following letter from E. L. Layard, Esq., Corresponding M.E.S.

“Jaffna, North Ceylon, April 28, 1862.

“Dear Sir,

“In looking over the ‘*Athenæum*’ of the 21st of February last, I see a notice of a *Bostrichus* penetrating the bamboo, and Mr. Curtis’s remark that that wood was considered not to be liable to the attacks of insects. I presume Mr. Curtis meant *English insects*, as in Ceylon it has many enemies, some, I fancy, peculiar to itself. The *outside* of this, and many others of its tribe, is however when old so hard and polished that it is seldom touched, except when perforated for the purpose of affording escape to the mature fly, whose imago has fed on the soft parts within. I have often been deceived by the appearance of a fine stout bamboo or cane, and on taking it into my hand its lightness, and a little pressure, has quickly shown me a mass of fine dust encased in a thin coating of the outside.

“I am no Coleopterist, but I know enough to recognize the beetles which cause

this mischief as belonging to the weevil family ; and, if I mistake not, there is a saw-fly which causes the same damage.

" And as to *white ants* ! — they revel in a bamboo fence. The hollow tubes are so many banqueting galleries ; and not content with rooms many hundred times their own length, they throw down the partition walls, and use the whole *en suite*. I speak feelingly on this point, as a fence, not fifty yards long, which I am putting up, is not finished at one end, and the Termites have begun at the other. Last night's rain has brought them out in force : I feared it would, as my table was covered with winged females, which flocked in to the lamp. By the way, how many species are there of this genus ? We have a black variety, *very rare*, thank goodness ! and I certainly have seen three if not four varieties of winged females.

" I am, dear Sir,

" Yours faithfully,

" EDGAR L. LAYARD."

" The Secretary of the Entomological Society."

Mr. S. J. Wilkinson exhibited a specimen of *Elachista albifrontella*, which he had reared from a naked pupa, found suspended head downwards near the bottom of a fence. He likewise exhibited specimens of *Oinophila v-flava*, bred from cases taken on the wall of a wine-cellar. The larvæ of this species were reputed to feed on wine-corks ; but these cases were formed of the black fungus common in old wine-cellar, and Mr. Wilkinson thought that the larvæ had in this instance fed upon the fungus, for though there was a quantity of bottled wine in the cellar, there were none of these insects on the corks or near them.

Some very interesting observations on the habits of several insects, by William Varney, Esq., were read.

Descriptions of various new Hymenoptera from Northern India, by Mr. F. Smith, were read.

Mr. Douglas read a paper entitled " Contributions towards the Natural History of British Micro-Lepidoptera," in which the larvæ and the habits of the following species were described : — *Gelechia contigua*, *G. fraternella*, *G. blandella*, *Coleophora albitalarsella*, *C. Alcyonipennella*, and *C. solitariella*. Two plates of illustrative figures by Mr. Wing accompany the paper. It was intimated that descriptions and figures of other species would follow from time to time, and Mr. Douglas requested collectors to send him any larvæ of Tineidæ they may find, with the plants on which they feed.

The following note by Mr. F. Smith, read at the June meeting, was omitted to be inserted in its proper place : —

" Observations on a Paper by G. Newport, Esq., F.R.S., F.L.S., ' On the Anatomy and Development of certain Chalcididæ and Ichneumonidæ, compared with their special Economy and Instincts, with Descriptions of a new Genus of Bee-Parasites.' "

" In Mr. Newport's excellent and highly interesting paper on bee-parasites, just published in the ' Transactions of the Linnean Society,' I observe some remarks on a communication of my own to that Society ; and I am anxious to correct one or two inaccuracies. The first is the date of capture given in the communication referred to. I stated that it was the summer of 1848, it should have been 1847, as I learn by the

* Trans. Linn. Soc. Vol. xxi., part 1.

date in Mr. Newport's paper; this is proved by a reference to my letter, in which I stated that I had placed specimens of *Monodontomerus* in the hands of Mr. Walker, for description, previously to having ascertained that Mr. Newport's insects were developed, although from time to time we had compared notes respecting the progress of each of our captures.

"Two localities are also established for the parasites,—Charlton and Gravesend,—since it was at the former where I obtained my larva of *Anthophora*, not at Gravesend, as stated by Mr. Newport, although I had been acquainted with the latter locality for fourteen or fifteen years, and had the pleasure of making it known to Mr. Newport.

"On reading the report of the meeting of the Linnean Society, March 20, 1849, I found it stated that the larvæ of *Monodontomerus* were pollinivorous; and when I took into consideration Mr. Newport's undoubtedly correct view, that 'structure, when carefully and accurately investigated, is an infallible index to function and habit:' and also, that the very announcement of such a discovery as that of an insect belonging to the family Chalcididæ being a feeder on pollen, was contrary to all hitherto recorded observation, I naturally concluded it to be a subject of the highest importance, and took the first opportunity of recording my own observations, which proved that *Monodontomerus* was, like its congeners, carnivorous; a fact which appeared to me calculated to invalidate the author's own views of the necessary connexion between structure and habit.

"I find at p. 67 of the 'Transactions' the following remarks:—'It was a question with me whether the bee-larva had not been killed by the other larva piercing it, and abstracting all its fluids from without? This query then seemed to be answered by the circumstance that the number of parasites was disproportioned to the size of the victim, which, had it served for food for them, would in all probability have been entirely consumed;' 'instead of which it contained the dried-up ligament and head of the young bee, which seemed to have been starved.' This being quite at variance with my own recorded observations, I would beg to recall to mind the circumstance that I observed the parasitic larvæ feeding upon the pupa, and not on the larva of the bee, which they continued to do until not a vestige of it remained; all that the cell contained, besides the parasitic larva, being a small portion of yellow dust, or small granules; so that a very curious and interesting fact, if supported by further research, appears to result from our combined observations; namely, that these parasites prey indifferently upon either the larva or the pupa of the bee: and as no similar instance of parasitism, so far as I can ascertain, is upon record, I am anxious to call attention to the fact, since it appears to have escaped the notice of Mr. Newport."—J. W. D.

Proceedings of the Microscopical Society.

May 26, 1852.—GEO. JACKSON, Esq., President, in the chair.

F. C. T. Roper, Esq., E. W. Cooke, Esq., and Henry Coles, Esq., were balloted for and duly elected Members of the Society.

A paper by George Busk, Esq., entitled "Some Observations on the Structure and Development of *Volvox globator*, and some allied unicellular Plants," was read. Mr. Busk stated that his observations had been chiefly made on *Volvox globator*, V. au-

reus, *V. stellatus*, and *Sphærosira Volvox* of Ehrenberg; these he believed to be all different forms of the same organism. He called attention to the structure of these objects, and more especially as regarded some points alluded to by Prof. Williamson, in a paper recently published by that gentleman on that subject; and while in some respects he expressed a different opinion from Mr. Willamsou, he fully agreed with him that they were truly of vegetable origin, and not animals. This he considered as proved both by their structure and their chemical composition. Thus, on testing their tissues with iodine and sulphuric acid, he had discovered in them both cellulose and starch. The analogies of their development with that of *Protoecoccus nivalis* and of *P. viridis*, were very strong, as well as with the supposed animalcule called *Euglenia viridis*. The author expressed his belief that the whole of the *Monadinae*, the *Cryptomonadinae*, and the *Volvocina* of Ehrenberg, belonged to the vegetable rather than to the animal kingdom.

A second paper, by Mr. Mummery, of Dover, "On the Development of the Young in *Tubularia indivisa*," was read. The author, taking advantage of his residence on the sea-shore, where these zoophytes abound, had for a considerable period attentively watched the development of the ova, and the results of his observations form the subject of the present paper. The various changes in the ovum, from its first development to its arrival at perfection, were minutely described. When the creature is liberated, its future basal end appears first. It emerges slowly, withdrawing its tentacles in succession until it sets itself at liberty. In this state it is not fixed, but free, and may be seen crawling slowly upon the bottom of the vessel containing it, and elevating itself on the extremities of its eight tentacles. After a period of time varying from one to four days, the animal which, in its free condition, has never been remarkable for activity, having selected a suitable stone or the surface of some old polypidom, reverses its position, and attaches itself with the mouth upwards by the opposite extremity, soon increases in size, and attains its usual form and characters, never removing from its place after having once rooted itself.—*J. W.*

Two Hundredth Anniversary of the Imperial Academy. — Simultaneously with the meetings of the German Association for the Advancement of Science, the Imperial Academy Naturæ Curiosorum, the oldest Natural-History Society in the world, has resolved to celebrate its two hundredth anniversary. The following is the official invitation:—

"Breslau, July 24, 1852.

"We have the honour of informing the Members and friends of the Imperial Academy Naturæ Curiosorum, in Great Britain, that the celebration of the two hundredth Anniversary of our Society, which was postponed on account of the cold season (the 1st of January being the real birth-day), will take place at Wiesbaden, on the 18th of September, 1852, simultaneously with the meetings of the German Association for the Advancement of Science. And it is to be hoped that the attendance will be most numerous on that important occasion; when every exertion will be made to render the stay of the members and visitors as agreeable as possible.—*The Presidium.*"

NOTICES OF NEW BOOKS.

*Falconry in the East.**

WERE it not that the author is so proud of his knowledge of oriental tongues that he thinks it desirable to display the said knowledge by a constant admixture of *Indiancee* words with his narrative, this would be a most agreeable addition both to the Zoology and Falconry of the East: but when a man is so delighted with having made out that "goolab," in some of the thousand and one dialects in which India rejoices, is the equivalent of yellow in English, that he must needs prate of a hawk's having a "goolab eye," we find his affectation all but insufferable, and devoutly wish that he were confined to the use of plain English for the remaining term of his natural life. We breathe this aspiration with the more especial zest, because we see that the lieutenant has good matter in him—matter which he is willing to impart, and which he would be more able to impart were it not for this strange conceit. It is true that he renders back into English every word that he has first rendered unintelligible to Englishmen: thus, a foot-note informs us that "goolab" is yellow; "kawla" a crow; "bazdar" a falconer; "kang" a crow; "div sapid" the white fiend; "laza" hit; "maloon" the cursed, &c.; but this clanjamfry of words is perpetually distracting the attention, without giving a crumb of information that any one except Elihu Burritt would care to pick up.

Having relieved our mind by this free expression of opinion; and having risked his indignation thereby; we shall probably find the author making us his quarry and flying his tooruratee with the goolab eye at us, as though we were a khargosh or a karotittar on a pippal in a shikargah of his own: indeed, to speak freely and more in the Anglo-Saxon vernacular, our criticisms may perchance induce him to administer to us a literary drubbing, like that which he has bestowed on the offending editor of the 'Athenæum.' But to our tale: here is a specimen of our author's style, and a very animated specimen too, one at which none of our readers will cavil.

"We were jogging very prettily, I began to think, along the beaten track of oriental conversation, when our course was arrested by an unforeseen incident. Instead of the occasional cawings and croakings of crows, to which the ear of the Indian traveller by habit speedily

* 'Falconry in the Valley of the Indus.' By RICHARD F. BURTON, Lieut. Bombay Army. London: Van Voorst, 1852.

becomes deaf, suddenly arose such a din of corvine voices, such shrieks and such a clashing of wings above and around us, that not one of the conversationists or the listeners but that turned his head. The crow is a kind of sacred bird amongst the Hindoos, which fact accounts, in some degree, for his uncommon impertinence. He is fed at certain seasons with boiled rice and other delicacies, so that he never, at any time, can witness the operation of cooking with the slightest attempt at patience. I have seen him again and again swoop at a dog, and carry off a bone which he persuades the hungry brute to drop, by a sharp application of his stout, pointed bill upon its muzzle. At times I have expected to be attacked myself by the friends and relations of the deceased, when, after half an hour's dance with St. Vitus to the tune of some villanous old scout's croak, I disposed of the musician by an ounce of shot. And if you wish to enjoy a fine display of feathered viciousness, order your servant to climb up a tree full of crows, and to rob the nearest nest. At such seasons it is as well to stand by with a loaded gun or two, otherwise the sport might end in something earnest to the featherless biped.

"The reason of the row was soon explained. Gaetano had thoughtlessly left a half-plucked chicken preparing for my supper within sight of a sentinal crow, whose beat was the bough of a neighbouring Neem tree. In a moment it was pounced upon, seized, and carried off. On one side all the comrades of the plunderer flocked together to share in the spoils which he resolved to appropriate, and most violent was the scene that ensued. On the other, up rushed the cook, the butler, the khalassis, and all the horse-keepers, as excited as the crows, determined to recover, with sticks and stones, the innocent cause of the turmoil. 'Send in for Khairu, the laghar,' said the ameer, in a whispering voice to Kakoo, as if afraid of being overheard by some listening crow. He certainly thought that if he spoke loud the birds would recognize the name, and really after some study of their idiosyncrasy, I did not treat the precaution of his tone lightly. Æsop had no experience in the character of the Indian 'Kak,'* otherwise he would not have made the fox outwit the crow.

"One of the attendants rose slowly from the ground, and looking indifferently around him went off by a *détour* towards the palace. Presently appeared two men dressed in green, with a large sheet spread between their shoulders so as to cover their near arms. Behind them came the attendants, carrying a dozen pellet and other bows. The

* "Kawla or kawwa, a crow."

pellet-bow merits a short description: — it would be a prodigious acquisition in Europe to naughty little boys who delight in breaking their neighbours' windows. It is made of a slip of bamboo, bent in the shape of our ancient weapon; as the old proverb advises, it has two strings stretched parallel to each other from horn to horn. About the centre a bit of canvas or coarse cloth, an inch or an inch and a half in length, is sewn tightly to the two cords, and against it the pellet, a lump of hard clay, about the size of a 'taw,' is firmly held by the thumb and forefinger which draw the bow. By dint of practice the natives of India can use this instrument upon small birds with fatal effect; the range is from sixty to eighty yards. To a tyro the only inconvenience of it is the occasional smashing of the pellet upon the thumb-knuckle of the left hand, an event quite the reverse of agreeable, and which invariably brings on a repetition of itself, in consequence of tyro's nervous anxiety to avoid it.

"The sight of these preparations for destruction in the servants' hands, elicited one long, loud caw from every crow that happened to be looking that way. Instantly those that were on the wing began skeltering in headlong flight through the foliage of the trees towards some safer roosting-place, and the few that were perched, sprang up flapping and shrieking, and following with all speed the example of their fellows. Even the chicken was forgotten in the hurry of the moment.

" 'Let the bone of contention lie under the tree, and if we don't notice them some will be back shortly,' said the ameer. 'Take Khairu into the tent and hide the bows.'

"The veteran falconer was right. About ten minutes afterwards an old crow was descried sneaking behind the plantation, and silently taking up a position in the thickest cover he could find. Then came a second and a third; at last we were aware of the presence of a dozen.

" 'Bring the bird,' whispered the ameer.

"The bazdar* came softly out of the tent, carrying on his fist Khairu, the laghar,† who was sitting erect, as if mentally prepared for anything, with head pressed forward, and pounces‡ firmly grasping the dasti.§ Her hood was then removed, her leash was slowly slipped, and as one crow bolder than the others lit furtively upon the ground,

* "Falconer.

† "Laghar, a large kind of hobby hawk.

‡ "The 'pounces,' in the language of falconry, are the bird's talons.

§ "Oriental falconers, instead of a glove, use a small square napkin of wadded cotton, secured to the wrist by a noose, and twisted round the hand, so that the bird sitting on the forefinger may clench it with her talons."

where the half-plucked chicken lay, Khairu, cast off with a whoop, dashed unhesitatingly at the enemy.

"Another tumult. Every Beloch that could handle a bow provided himself with one, and all of us hurried to the open space whence we could descry the evolutions of the birds. At the sight of the hawk, the crow precipitately dropped his prize, and shrieking as usual, skurried through the trees pursued by his stubborn foe. Now all is excitement. The attendants rush about whooping and hallooing, in order if possible to frighten the quarry still more.

"Vainly the crow attempts to make a distant shelter, the laghar hangs close upon him, gaining every moment. Corvus must shift his tactics. Now he attempts to take the air, wheeling in huge circles gradually contracted. But Khairu has already reached his level, another instant a swoop will end the scene. The crow falls, cunningly, as might be expected, presenting his bill and claws he saves himself from the stoop, and having won, as he supposes, distance, cleverly turns over, and wriggles through the air towards his asylum. Already it is near, — a large clump of thorny mimosas, from whose rugged boughs resound the voices of a startled colony.

Khairu, with a soldier's glance, perceives the critical moment, plies her pinions with redoubled force, grapples with her quarry from behind, weighs him down rapidly through the cleaving air, and nearing the earth, spreads her wings into parachute form, lighting with force scarcely sufficient to break an egg.

"The battle is not finished. Corvus, in spite of his fall, his terror, a rent in the region of the back, and several desperate pecks, still fights gallantly. This is the time for the falconer to assist his bird. From the neighbouring mimosas, roused by the cries of their wounded comrade, pours forth a "rabble rout" of crows, with noise and turmoil, wheeling over the hawk's head, and occasionally pouncing upon her, *unguibus et rostris*, with all the ferocity of hungry peregrines. We tremble for Khairu. Knowing her danger, we hurry on as fast as our legs can carry us, shouting, shooting pellets, and anathemizing the crows. We arrive, but hardly in time. As we plunge through the last bushes which separate us from the hawk, twenty cawers rise flurriedly from the ground; the bazdar hurries to his laghar. The quarry lies stone dead, but poor Khairu, when taken up and inspected by thirty pair of eyes, is found to have lost her sight, and to be otherwise so grievously mauled, pecked, and clawed, that the most sanguine prepare themselves for her present decease. Alas, poor Khairu!" — P. 5.

The species of hawks used in falconry is a subject in which the zoologist has ever felt an interest, and we offer no apology for introducing at length Mr. Burton's enumeration; premising, however, that it would have been a great boon to us, who admire precision in all things, if he had given the scientific as well as the local names, and thus enabled us to determine the species. It is more than probable that some of the birds are entirely unknown in Europe, but then it is unwise to give them names "familiar as household words" to English ears. If Mr. Burton would kindly take the trouble to look over the Indian birds in the British Museum, and, in the next edition of his book, add the technical name which he will there find attached to them, it will give a greatly increased value to his volume in the eyes of the naturalist. From the following names which he mentions, we can draw no satisfactory conclusions:—

1. "Sherbaz of Bokhara," p. 13.
2. "Bhairi," p. 13; this is considered a synonyme of the peregrine.
3. "Bashah," p. 13.
4. "Ukab," p. 37.
5. "King Curlew," p. 57.

However, here is Mr. Burton's list of hawks.

"The following are the principal varieties of birds generally known to the Scindian falconer:—

"1. The Shahbaz, or hawk-king, a large gray goshawk with yellow eyes, caught in the hills of Afghanistan and its surrounding regions, brought down to the plains, and sold, when well reclaimed, trained, and in good condition, for £5 or £6. The tiercelet or male is, as usual, much smaller than the female, and is called Jurrab, in Persian 'the active.' Both are uncommonly strong and ferocious. They are accounted the noblest birds: the Sher-baz ('lion-hawk') or peregrine of Bokhara and the snowy regions, being all but unknown here.

"2. The Bahri (Bhairi), or *Falco calidus*, so celebrated amongst Indian falconers for her boldness and power, and her tiercel, here vulgarly called the Shahin, are found in some parts of the province. They fly at partridges, hares, bustards, curlews, herons, and the Saras; * being long-winged hawks or birds 'of the lure,' † they are taught to fly high, to 'wait on' ‡ the falconer and to 'make the point.'

* "The Indian crane, a splendid bird, sometimes standing six feet high.

† "Hawks are of two kinds:—1. Birds of the lure, or the long-winged. 2. Birds of the fist (because they fly from thence instead of swooping from the air), or the round-winged.

‡ "The perfection of a falcon in Europe is that her pitch be as high, her range as

"3. The Bashah, a kind of sparrow-hawk, and her mate the Bashin, a small, short-winged, low-flying bird, with yellow eyes and dark plumage in her first year, which afterwards changes to a light ash-colour, marked with large gray bars, are very much valued here on account of the rapid way in which they fill the pot, especially with partridges. As they remain in Scinde during the cold weather, and retire in summer to the hills around, those trained are 'passage hawks,' or 'birds of the year;'^{*} their low price, 8s. or 10s., makes it scarcely worth while to mew them, † so they are let loose when the moulting season commences.

"4. The Shikrah, and her tiercel the Chipak, are our common English sparrow-hawks. They are flown at partridges, and by their swiftness and agility afford tolerable sport. At the same time they are opprobriously called 'dog-birds' by the falconer, on account of their ignoble qualities, their want of staunchness, and their habit of carrying the game. They may be bought ready trained, in most parts of Scinde, for a shilling or two.

"5. The Laghar, or hobby, and her mate the Jaghar. This is the only long-winged hawk generally used in the country; she is large and black-eyed, with yellow legs, black claws, and a tail of a cinereous white colour. She is a native of Scinde, moults during the hot months from April to October, and builds in ruined walls and old mimosa trees. The Laghar is flown at quail, partridge, curlew, bastard bustard, and hares; the best sport is undoubtedly afforded by crows, only she is addicted to carrying the quarry, and is very likely to be killed by her angry enemies."—P. 13.

And now for a story of the "Ukab,"—a story which, be it observed, our author only gives on hearsay. We should, above all things, like to have heard that Mr. Burton had been an eye-witness of the scene, for we candidly confess to the entertaining of grave doubts upon the subject: we think that Mr. Burton has either been too credulous in

far, and her swoop as perpendicular as possible. To 'wait on' the falconer is to follow him (in the air) wherever he pleases.

* "The passage hawks, or birds of the year, are those caught (full grown) in nets and traps at the period of migration: opposed to the 'eyesses,' or those taken from the nest.

† "To 'mew' a falcon is to keep her in a state of captivity whilst she moults. Thus she becomes an 'intemewed' bird, opposed to a 'haggard,' a wild hawk after the first year."

taking literally the amusing narrative of the ameer ; or that the word "vulture" with him and with ourselves are not synonymous terms.

"'Well, Sahib,' continued the ameer, speaking by jerks, as his breathlessness allowed him, 'one day I flew my beautiful Bahri after a little heron, which we all expected to see killed in a moment. They took the air well together, when, of a sudden, "See the Ukab, Oh, the Ukab!" cried the bazdar. True enough! High above us was the wretch, a black dot in the blue sky, looking out like an Affghan, for what he could plunder. We shouted — we waved the lure : unfortunately my poor bahri was so eager after her quarry, that nothing could tempt her out of the way of destruction. Then the ukab disappeared from our eyes, and we thought that the maloon* had been frightened by our noise. The falcon and the little heron kept rising and rising, till we lost sight of them also. Presently, by the Prophet's beard I swear to you, Sahib, as we stood looking upwards with straining eyes, a speck appeared like a fly in the air, larger and larger it grew, the instant after, plump fell a body at our feet. It was poor Sohni, my falcon. The accursed vulture had shattered her skull with his foul beak. And since that day I have liberally dispensed kisas† to all his breed."—P. 37.

One more quotation, and we have done.

"It was a heart-gladdening spectacle for a sportsman. The pure blue sheet of water, lined with a fringe of vivid green, was literally covered with feathered life. The king-curlew with his ruby crown, and the common curlew, so celebrated, despite his homely garb, for the soaring and racing chase he affords, were pacing the bank in busy troops. Gulls and graceful terns hovered over the marsh, here alone in the air, there mingled with flights of red and white Brahminee ducks, wheeling about in search of a spot to alight on. The tall saras stood in pairs, now plunging their bills into the shallow water, now scattering pearly drops from their pink throats : the bittern's ruff peeped out of the green weeds, and the snowy white cloak of the paddy-bird glistened dazzlingly amongst the russet-coloured uniforms of duck and diver, snipe and snippet, plover and wild goose. Lank herons were there, and stout matronly pelicans gazing stolidly before them, with bustards large as turkeys, and a goodly array of plump little teal ; the painted snipe, with beautiful dark colours ornamenting his wings ; the

* "The cursed.

† "The *lex talionis*, described by Mohammed the Prophet as the very vitality of his amiable faith."

mallard with his gorgeous plume, and many varieties of quiet-looking cranes swam, and dived, and shook, and splashed, all screaming, each in his own tongue, their natural joy in a life to them at that moment full of charms."—P. 57.

Notwithstanding its eccentricities, its Indianisms, and its occasional entanglements, we heartily commend this little book to the notice of our readers, not doubting that they will, with a little industry, extract therefrom abundance of amusement and a good share of instruction also.

K.

Instance of a Blackbird turning white from fright.—Every one at all cognizant of the manners and customs of the English in olden time, knows that it was an ancient custom in this kingdom, at the time when the humane sports of bull-baiting, cock-fighting, and the like, were in vogue with our merry forefathers, for the enlightened populace of England to collect together in every village on Shrove Tuesday, for the purpose of throwing stones and other missiles at some unfortunate cock, doomed to destruction on that day, and that he who first knocked over the miserable bird claimed him as his lawful prize: this was the sport known as "cocking." But perhaps it may not be so generally known that the remains of this ancient and barbarous custom still exist in some of the villages of Somersetshire, though in quite a different form, under the name of "crocking." It is the habit at this day, in some parts of that county, if there be any especially disagreeable person in the village, for his or her neighbours to throw down, with most discordant and crashing noise, at the door of their victim, all the broken pots and pans and such-like crockery that they have collected during the preceding twelvemonth; this takes place on the night of Shrove Tuesday, and as the actors in the sport are usually pretty numerous, and their object is to make as much clatter and din as possible, we may imagine the disturbance and noise created at such a time to be of the most deafening description. In a certain parish of Somersetshire, of which a relative of mine was the curate, an old lady, for some cause or other which it matters not to relate, became very obnoxious to her neighbours, and they, following the ancient custom of the place, saluted her on a certain Shrove Tuesday evening with all the broken crockery they could collect; indeed they carried out the pastime of "crocking" to the full. Now it chanced that hard by this persecuted individual was a public-house, the owner whereof had a tame blackbird, whose sleek black coat and rich notes had charmed many a lazy loiterer, and the bird was well known to all the inhabitants of the parish: but though the blackbird had doubtless listened to many a deep argument in the tap-room, and had his own peculiar opinions about protection, I fear he had never been initiated into the mysteries of "crocking," and so his mind had never been prepared for the horrors he had to undergo. But time went on, the end of the Carnival set in, and the blackbird without doubt, as an orthodox bird, ate pancakes to the full, and went off to roost, when suddenly he awoke with a start, his ears were assailed with the most discordant and crashing sounds, such a diabolical noise as he had never before heard so flurried and confounded him, that for two whole days he seemed to be panic-stricken, hopping about his cage incessantly, refusing his food, and apparently overcome with fright, and unable to shake off the terror with which the noise of the

"croaking" had inspired him. So tremulous and confounded had the poor bird become, that fears were entertained for his life; however, at the end of two days, he began to be more tranquil, and gradually forgot his late fright, and became once more the same jovial merry fellow he had been before. But soon the season for moulting came on, and now, instead of the black coat for which he was so famous, he assumed a piebald dress of black and white, to the great amazement of all who saw him. I have known more than one instance where the hair of a human being has been turned white in a single night from sudden and extreme terror; but this is the first instance that ever came to my notice of such an effect being produced on any irrational creature: however, I can vouch for the truth of the above statement, as my friend, who told me the story, knew all the circumstances well, and had constantly seen the bird in question, both before and after his fright.—*Alfred Charles Smith; Old Park, Devizes, August 12, 1852.*

Note on a double Nest of the Greenfinch.—During the spring of this year, in a thick bushy plant of an ornamental heath, growing in a garden a few miles distant from the city of Norwich, were found two nests of the common greenfinch, which not only were completely interwoven at the adjoining sides, but were built on one common platform, a foundation of fibrous roots and moss. Both nests were complete, except that one of them was deficient in interior lining. When found, I understand there was one egg in each nest, but it was not ascertained whether the nests belonged to two pairs of birds, or only to one pair.—*J. H. Gurney; Easton, Norfolk, August 7, 1852.*

Anecdote of Flycatchers (Muscicapa grisola).—"Singular Bird's Nest. Our attention was some time since drawn to the singular situation chosen by a pair of *post birds* to build their nest in Cuckfield Place garden. Mr. Coomber, the farm bailiff, having been using a hoe in the garden, hung it on a nail against the wall, beneath a small shelf, and on going to it again found a pair of birds very busy building their nest upon it. He let it remain, and in a short time they had finished their task, nicely fitting the moss to the hoe and the face of the wall. The hen bird laid four eggs, upon which she sat, and in due time, notwithstanding she was constantly visited during the time of incubation, hatched as many young ones, which the old birds constantly attended to, and brought up, until they forsook the nest, regardless of interruption. Mr. Serjison and family took much interest in the progress of the young brood, and they were visited by many persons: Mr. Coomber taking the nest off the hoe when he wished to use it, and placing it on the shelf or the ground while he was hoeing, but the birds did not seem alarmed, still feeding their young and attending to their parental duties, as if nothing had happened; and as soon as he replaced it in its original position, they would express their gratification by flying round and chirruping forth their song of joy, thus bringing up their progeny until they were fully fledged and able to provide for themselves."—*From the 'Sussex Express' Newspaper of July 31, 1852.*

Curious Variety of the Sedge Warbler (Salicaria Phragmitis).—About a fortnight ago I was shown a very curious variety of the sedge warbler, killed in Sussex. It was a bird of this year, but full grown, and of a uniform light canary-yellow all over, except that on the top of the head there were a few spots or small streaks of pale olive.—*W. F. W. Bird; 5, King's Road, Bedford Row, August 4, 1852.*

White Willow Wren.—This morning I saw in the kitchen-garden here, a white willow-wren (*Sylvia Trochilus*). I watched it closely for some time, so as to be certain of its specific identity, and then proceeded into the house to fetch my gun, to

endeavour to obtain it, in which however I was unsuccessful, as after missing at a long shot, it dived down amongst the underwood of a thick hedge, and I saw no more of it. This bird was in company with another of the same species in the ordinary plumage. I have said above that it was *white*, but this, strictly speaking, is hardly correct, for the real colour was a very pale canary-colour, or white with the slightest possible tinge of yellow. I have frequently heard of, and several times seen, white varieties of some other birds, as sparrows, robins, &c., but never before knew that the willow-wren was subject to this occasional variation in plumage.—*Octavius Pickard Cambridge; Bloxworth House, near Blandford, Dorset, July 31, 1852.*

The Kingfisher does make a Nest, at least in every case that has occurred to me, of which I will give you a few instances. In No. 1, which I saw opened, or rather the hole enlarged so as to admit the hand and arm, there was at the end a nest or bed of clean fish-bones, but *no eggs*. The old birds were so busy in and out of the nest every few minutes, as to induce the idea that they had young. In No. 2, which I opened, I found in the hole, just before coming to the nest, maggots creeping about in a small quantity of damp ejected matter, but the nest of bones was quite dry and clean, and contained seven eggs, half hatched, but capable of being blown. No. 3, which I saw opened, had maggots about the same spot, but the nest of bones was dry and clean. The birds had been seen to frequent this hole for about a month or six weeks previously, and each generally had something in its bill when going in. From this nest were taken six eggs, which had not been sat upon. No. 4 I opened; here were maggots as usual, and the nest of bones dry and clean: from this I removed seven eggs, not sat upon. This was certainly a new excavation. No. 5 also I opened; no eggs, nest of bones dry and clean. This was an old mouse-burrow, which extended beyond the cavity containing the nest. About a yard from this I opened No. 6, which was in a most disgusting state, ejected and evacuated matter lining the hole for more than a foot before coming to the nest. I was quite satisfied with just feeling the young birds nearly feathered at the extremity of the hole. All the above were in the banks of the Trent, and I could give you many other cases, all of which fully prove that the kingfisher does build a nest, and that of fish-bones. I do not deny that they may sometimes make no nest, but I think this the exception, not the rule, for it is highly probable that when deprived of the nest (as in Nos. 1 and 5), the birds may possibly hollow out a fresh hole, and deposit their eggs upon the bare earth, time not permitting them to furnish it with the usual bed of bones.—*R. W. Hawkins; Rugeley, Staffordshire, August 7, 1852.*

Instances of the Woodcock (Scolopax rusticola) breeding in England.—Although it is now pretty generally known that one or more woodcocks regularly stay in this country throughout the summer, and breed here, yet the published cases are so few, that I think every well authenticated occurrence of the kind should be made known to ornithologists. Through the kindness of Mr. John Cooper, the naturalist and bird-preserver, of Radnor Street, St. Luke's, I have just been shown a beautiful woodcock, which was killed this morning, very early, at Tunbridge Wells. It is a female, and, from the appearance of the feathers on her breast, she has evidently been nesting. The markings on her upper parts are very dark in colour. I take this opportunity to mention another instance, which was detailed to me four years ago, in the following communication from my friend Mr. H. C. Beddoe, of Hereford, a keen sportsman, and a lover of Ornithology, and I am very sorry to have allowed his letter to remain so long in my portfolio:—"On the 3rd of May, 1848, as the keeper of Thomas Clarke, Esq.,

of Derndale, near Hereford, was going his rounds, he came to a spot in the 'Wellington' cover, near to the mansion, where a hawk had plucked some small bird. Shortly afterwards a bird, which he took to be the hawk, rose and darted into the wood. The keeper fired and killed it, and then discovered that he had shot a woodcock. Retracing his steps, he found four young ones, apparently about a week old, and much resembling young lapwings, running through the brushwood. The dead bird proved to be a female; and as her consort could not be discovered anywhere in the neighbourhood, the keeper took the young ones home, and tried to rear them, but without success; they died on the third day. The parent bird and her young were preserved, and are yet in Mr. Clarke's possession." — *W. F. W. Bird*; 5, *King's Road, Bedford Row*, August 4, 1852.

"*Woodcock's Nest*.—A pair of these wanton [*sic*, ? winter] visitants took up their summer quarters in one of Mr. Cherry's woods at Pilstye, this year, when the hen bird sat upon four eggs, bringing forth three young ones, which ran as soon as hatched. It is rare for these migratory birds to breed in England; but we suppose they were left behind by the convoy, and preferred staying rather than risk the journey alone."—*'Sussex Express'*, July 31, 1852.

Nesting of the Woodcock in Staffordshire.—Within the last few years the woodcock has commenced building on Cannock Chase. They are like the common snipe, double brooded, the first laying taking place the latter end of March, the second in June. They choose a similar situation to the pheasant for their nests, near the root of a tree, or the shelter afforded by a small patch of brushwood, the immediate vicinity of water or marshy ground not being considered a necessary qualification. As a matter of course they are strictly preserved. — *R. W. Hawkins*; *Rugeley, Staffordshire*, August 7, 1852.

Curious want of Instinct in young Ducks.—I have been always led to imagine that the instinct of animals is never at fault; I was therefore much astonished to find fifteen ducks, belonging to a clergyman in this neighbourhood, which had been hatched under one of their own species, and brought up for a short time in a farm-yard, refuse to enter a pond when they were brought to it, and when thrown in, instead of swimming, as one would naturally expect, actually *running* across the water and scrambling up the bank!—*E. I. R. Hughes*, *Curate of Runcitonholme*; August 16, 1852.

Capture of the Sun-fish (Orthogoriscus Mola) at Ilfracombe.—It may be worth while to record another instance of the capture of this somewhat rare, and in many respects curious fish. One was caught this morning, about 10 o'clock, a quarter of a mile off the mouth of Ilfracombe harbour, and has been exhibited through the day. It was slowly moving at the time of its discovery, with a waving motion from side to side, "like a man sculling a boat," to use the comparison of the sailor who helped to take it; the back-fin appearing above water. The fish permitted the boat to come close up without exhibiting alarm, nor was he even disturbed when her side came into contact with his bulky person. The fellows made a bowline-knot, and slipped it over his head, tightening it before his dorsal and anal, so that the knot came in the middle of his side. Thus they hauled him in, not without a wetting, for with a flapping action of his ample fins (again a sort of sculling) he *scooped up* the water and threw it

over them and into the boat. He survived his introduction to the public about an hour. I found the length of this specimen 4 feet 6 inches; the depth (not including the fins), 2 feet 5 inches; the dorsal, 1 foot 6 inches; and the anal, about an inch less; making the total depth a little more than 5 feet. Its weight was estimated at 200 lbs. The first figure in the memoir of this fish in Mr. Yarrell's 'British Fishes' (ii. 462), is admirably accurate. That given at p. 464 is not so good. The appearance of rays in the tail is not a reflection of nature. That organ is clothed with the common rough integument, with no trace of rays, but only a slightly waved surface, and a crenated edge. The skin was studded with a considerable number (I cannot say how many, for several had been removed, and I think I saw more than a score on one side) of flat, circular, parasitic worms; I should say indubitably the species described and figured by Mr. Yarrell in his account of this fish (*Tristoma coccineum*), but that I can see no propriety in the second appellation; the specimens being all of a leaden gray hue, mottled with black specks: I have no opportunity here of referring to Rudolphi's work. They were chiefly congregated on the broad cheeks of the fish. This is at least the third specimen of sun-fish that has been taken at Ilfracombe. The seamen say it has the habit of lying horizontally at the surface in the hot sun, with its whole broad side exposed, and, as they suppose, asleep: this individual, however, was upright. The weather was fair, with light breezes, at the time of the capture; but two days ago there was a very heavy gale from the north-west, which lasted about fifteen hours. Whether there was any connexion between the presence of the fish and the gale, I cannot say; but it is well to record such circumstances. — *P. H. Gosse; Ilfracombe, August 14, 1852.*

Notes on Mr. Stephens' 'Catalogue of Lepidopterous Insects in the Cabinet of the British Museum, (Tortrices).' By HENRY DOUBLEDAY, Esq.

I SHOULD not have made any remarks upon the Museum Catalogue of Tortrices, lately published, had it not contained a very unfair attack upon my friend M. Guenée's admirable work upon the Noctuæ. An attempt to describe and arrange every known species of this family is no easy task, and probably some few errors have crept in; but I unhesitatingly state that no work at all approaching it has ever appeared in this country.

Mr. Stephens charges M. Guenée with not always adopting the oldest name, and gives as instances *Nonagria paludicola* and *Stilbia hybridata* of Guenée's work, *gemmipuncta* of Hatchett and *anomala* of Haworth having the priority; but these names were published in the 'Transactions' of the old Entomological Society, a work which M. Guenée could not procure, and which in all probability he has never seen: and the reference to the latter is particularly unfortunate, as Mr. Stephens, with the work before him, gives in his 'Illustrations'

the *hybridata* of Hübner as the *anomalata* of Haworth. Now this latter species is a *Geometra*, and thus characterized : — “Wings pale fuscous, with three darker strigæ, size of a minute *Phalæna*.” What species Haworth intended I cannot say, but certainly not the hybridata of Hübner, which is well described on the preceding page by the name of *anomala*, and afterwards, I believe, first applied to this species in my Catalogue.

Mr. Stephens states that M. Guenée refers without question to those names of a prior date which he has not adopted ; and amongst others mentions *Nonagria despecta* (*Treit.*), which he says is the *Noctua rufa* of Haworth. In ‘*Lepidoptera Britannica*’ there is a *Phytometra rufa*, to which M. Guenée refers with *doubt*, and in the old ‘*Entomological Transactions*’ there is a “*Noctua rufa*, *Lep. Brit. ined.*” which is *Tæniocampa rubricosa*.

Mr. Stephens having given these instances of “an abrogation of the law of priority” by M. Guenée, I will give a few extracts from the Museum Catalogue, where Mr. Stephens is apparently liable to the same charge.

Names adopted by Mr. Stephens : —

<i>Tortrix palleana</i> , <i>Treit.</i> 1830,	=	<i>flavana</i> , <i>Hüb.</i> 1801.
„ <i>transitana</i> , <i>Guen.</i> 1845,	=	<i>Acerana</i> , <i>Haw.</i> 1812.
<i>Spilonota dealbana</i> , <i>Fröl.</i> 1828,	=	<i>incarnana</i> , <i>Haw.</i> 1812.
„ <i>aceriana</i> , <i>Dup.</i> 1843,	=	<i>Sociana a.</i> , <i>Haw.</i> 1812.
<i>Lithographia nævana</i> , <i>Hüb.</i> 1814,	=	<i>unipunctana</i> , <i>Haw.</i> 1812.
„ <i>immundana</i> , <i>Fisch.</i> 1839,	=	<i>triquetrana</i> , <i>Haw.</i> 1812.
<i>Argyridia dipoltella</i> , <i>Hüb.</i> 1834,	=	<i>margaritana</i> , <i>Haw.</i> 1812.

I do not say that Mr. Stephens is wrong in adopting the more recent names ; but if there is no doubt about those of Haworth, some of them certainly ought to have been retained, and there is nothing in the Catalogue to show why they are discarded.

At page 8 of the Introduction, Mr. Stephens, in allusion to the nomenclature adopted by M. Guenée, says, “in the case of the specific names, several of the alterations arise from the expansion of the ‘*homonymic*’ system, above deprecated, among the *Noctuidæ*.” I cannot understand this sentence : it appears to me that Mr. Stephens’s system is “*homonymic*,” and not M. Guenée’s, for the only possible meaning that I can see in the word is, having more than one species with the same name, a practice which M. Guenée most properly condemns.

So far from the plan of using the same specific name for only one species in each principal group leading to confusion, it is the only

way to prevent it. If Mr. Stephens could bring all entomologists to agree as to the limits of genera, duplicate names would be of comparatively little consequence ; but this he will never do. In the 'Illustrations' there is a *Glyphipteryx auroguttella* and an *Euspilapteryx auroguttella*, about fifty species being placed between them. Mr. Stainton gives them as following species in the genus *Gracillaria*, and adopts Zeller's name of *quadruplella* for one of them ; and should Mr. Stephens ever publish a Catalogue of *Tineæ*, he will probably restore his own name, and surely it must lead to confusion to have two minute insects, which can scarcely be distinguished from each other without the aid of a lens, with the same specific name.

The note respecting *cribrella* is particularly unfair, a portion only of M. Guenée's remarks being given. He says that "the name of the Vienna Catalogue ought not to be adopted, as there is a *Lithosia* of that name *which might easily be confounded with it by a beginner in Entomology*." The portion in Italics is omitted by Mr. Stephens, who, had he fairly quoted M. Guenée's remarks, would have rendered the paragraph at page 12 absurd, as Guenée never changed the name of a *Tinea*, simply because a *Bombyx* with the same name existed. Uniformity of termination in the specific names is a great advantage in the minute tribes, and M. Guenée would have altered the name *cribrum* to *cribrella*, had there been no other species with a similar one ; and merely alludes to the *Lithosia* as an additional reason for the change.

In allusion to M. Guenée's genera, Mr. Stephens says that "from fifty to sixty generic names are doubly employed in the *Noctuidæ* alone, — a practical example of showing his opinion of the inferiority of *generic* to *specific* names used '*homonymically*.'" What the latter portion of this sentence means I do not know ; but out of eleven of these pretended duplicate names, only four are really so, for surely *Barydia* and *Baridius* cannot be considered identical, any more than the specific names *divergens* and *devergens*, employed in the genus *Plusia*.

In his notice of the various authors who have written upon the *Noctuæ*, M. Guenée makes the following remarks upon the 'Illustrations' of Mr. Stephens : — "Whilst Duponchel, dismayed at the number of genera of the German authors, hesitated to adopt them, Mr. Stephens accepted them and doubled their number. My coadjutor has given, in the Introduction to the first volume, the series of those of the 'Systematic Catalogue ;' that of the 'Illustrations' differs a little. These works are founded upon the natural method, and the author has

derived his characters from all the states, although the preference for those taken from the perfect insect is manifest, the study of the larvæ not being so much advanced (at least at that period) in England as in other countries. Mr. Stephens has analyzed with care all the characters, and especially those of the palpi, which he has detailed with great minuteness. The other parts are not more neglected, and the author has shown in the 'generalities' the principal differences which distinguish them.

"But the specific part is as defective as the generic part is praiseworthy. The species created from simple varieties are scarcely less numerous than those of Haworth, and one vainly endeavours to recognize them by the aid of the descriptions, which are altogether wanting in precision. The synonymy which would have helped their insufficiency is very limited and very careless; and if I have been able to introduce into my work the Noctuæ of Mr. Stephens which correspond with ours, I am especially indebted to Mr. Doubleday, who made known to me a part of them in nature."

"Some plates, moderately executed, accompany the work of Mr. Stephens, which comprises the insects of all orders which inhabit Britain, and shows a great variety of knowledge, and a considerable and careful study of the exterior anatomy."

One great fault of the 'Illustrations' is the impossibility of knowing what is original and what copied; and in numerous instances, the descriptions being translations from Ochsenheimer, &c., do not apply to the species intended by Mr. Stephens. M. Guenée has repeatedly noticed this in his letters to me. As an instance I may mention *Eupœcilia dubitana*. An insect has long been known by this name in England; and in the 'Illustrations' a description is given in which the head is said to be *white*: but the species known at that time in England has a *black* head, and is now called "*atricapitana*" by Mr. Stephens, but erroneously stated to have been captured near Bristol. Mr. Sircom discovered the true *dubitana* in that neighbourhood about three years since, and sent specimens to me: it was then unknown in the London cabinets, and I forwarded some to Zeller, who kindly named it for me, informing me at the same time that the black-headed species was new to him.

An error as to locality has also been made with regard to the *Peroœna*, discovered by my friend Mr. Edwin Shepherd. This species feeds upon the meadow-sweet (*Spiræa Ulmaria*), and I proposed to name it *Spiræana*; but Mr. Stephens has named it "*Shepherdana*," and says it was found at "*Shepherd's Bush, Middlesex*," whereas Mr.

Shepherd met with the larvæ in the fens of Cambridgeshire. It appears to be a good species, but is closely allied to *aspersana*, which feeds upon *Spiræa Filipendula*.

With regard to the species or variety called "*stabilana*" by Mr. Stephens, I may just remark that I first noticed this insect last autumn in a box from Yaxley; it struck me as having a peculiar appearance, and I thought it might prove a distinct species: and at that time I hoped to have been able to settle the question this season, by rearing them from the larvæ; in this, however, I have been disappointed. It differs considerably in form from *Solandriana*, the wings being broader, in this respect resembling *sordidana*, but it is destitute of the peculiar glossiness of that species. It feeds upon *Myrica Gale*, and I proposed to call it *Myricæcolana*, should it prove a good species.

Three or four of the Tortrices given as species in the Museum Catalogue I believe to be mere varieties, and it is seldom safe to create species from a single specimen. With very few exceptions, Mr. Stephens has adopted my views as to species and varieties, and the names of eighty-eight out of two hundred and five real species described in the 'Illustrations' are changed, and upwards of one hundred there given as species are very properly sunk into varieties.

In conclusion, I very strongly recommend every entomologist to procure M. Guenée's work and judge for himself; and sincerely do I hope that the author may be enabled to complete the task he has undertaken.

HENRY DOUBLEDAY.

Epping, August 13, 1852.

Entomological Localities. By J. W. DOUGLAS, Esq.

(Continued from page 3519).

THE NEW FOREST.

"O, for a lodge in some vast wilderness,
Some boundless contiguity of shade!"—*Cowper*.

"To him who in the love of Nature holds
Communion with her visible forms, she speaks
A various language: for his gayer hours
She has a voice of gladness, and a smile
And eloquence of beauty, and she glides
Into his darker musings, with a mild
And healing sympathy, that steals away
Their sharpness, ere he is aware."—*Bryant*.

When on some hot summer's day the dweller in London feels that the accumulated toil of a year has reached its culminating point, and he says he can stand it no longer; then, whether he be weighed down with what Wordsworth calls "the dreary intercourse of daily life," the dignity of labour or the labour of dignity, I would suggest a sojourn to the New Forest, where, by the calm appliances of Nature, he will find himself soothed and renovated for work to come. To the entomologist it is scarcely necessary to do more than mention the name of the place to call up visions of rare and beautiful insects: let him go there, and he will find that his dreams have become realities, and that there is no danger of his recreation being perverted into idleness. And the mere lover of Nature — he who has not individualized the perception of the beautiful within him, who looks at everything in the mass, and possibly views an entomologist as a trifler and incapable of rising to his level—he, too, may here, in the company of

"Those green-robed senators of mighty woods,
Tall oaks,"

find more food for high and holy thoughts than a watering-place, with its London liveries and fashionable amusements, can afford. It would be very desirable to imbue this very numerous class of general admirers with more particular ideas of Nature's products, both for the benefit of the individuals and science; and, if I may judge from certain experiences, I believe the general feeling of beauty in, and the special observation of material objects, may both be cultivated in one and the same person. I know the contrary to have been asserted; Inglis, in his 'Walks in many Lands,' says that "Botanists and mineralogists are so intent upon their single avocation, that they are incapable of that vague and undefined species of enjoyment which is swelled from many sources, and is, I suspect, a full equivalent for hammering stones or pulling flowers to pieces." Now a naturalist *may not* observe anything more than the immediate objects of his inquiry, although then, "I suspect," he has the advantage, even in the preliminary matters of breaking stones or dissecting flowers; but he is not thereby of necessity unfitted to appreciate the general beauty and harmony of creation, his perception of these being dependent upon his measure and exercise of other and higher faculties than that of observation. A little further on the same author says, "In my walk round St. Honorat I saw the largest dragon-fly I ever met with; I busied myself for some time in endeavouring to catch it, not to stick a pin through it and place it in my entomological case, but to return it to the citron blos-

soms of the mainland, from whence I thought it probable the wind might have carried it to its present exile ; but not being aware of my good intentions, it defied all my endeavours." Now "I suspect" a little entomological knowledge would not have hindered any "vague and undefined enjoyment" of the scene, and he would not have sympathized with the presumed exile of a carnivorous insect from citron blossoms !

Let us return. This New Forest, in Hampshire, was so called by William the Conqueror, who amplified a forest previously existing, till a tract of country twenty miles long and fifteen broad was converted to his royal uses. Twenty churches and many more villages were cleared away to make room for oaks and deer, the villagers being evicted and driven away without any recompense. It is not wonderful to find a historian of the time, writing thus of the deaths of his sons, William Rufus and Richard, in the forest : — "Ferunt autem multi, quod ideo hi duo filii Willielmi Regis in illa sylva iudicio Dei perierunt."

Many extensive portions are now enclosed and cultivated, but the forest proper is still estimated to contain 68,000 acres. Some parts are quite open, others are occupied by young plantations, chiefly of oak and fir, and the rest is covered with forest trees, principally oak and beech, of all sizes and ages, on which generation after generation of some of our rarest insects live and die unseen by human eyes, some few straggling specimens alone excepted.

There are two villages in the forest, Lyndhurst and Brockenhurst, at which entomologists usually put up ; the neighbourhood of the latter however is accounted the best district, and though the inn there is of less pretension than that at Lyndhurst, it is quite good enough for country quarters, and has the advantage of not costing so much. An insect-hunter, when "roughing it," should rather be content to be waited on at the hands of a village maiden, than look out for the obsequiousness of a full-dressed man-waiter, with its somewhat costly *finale*. And if he have a touch of Nature in him, he will wish for no more.

I add the names of a few of the finest Lepidoptera that have been found in this locality.

Deiopeia pulchella. Near Christchurch ; September.

Eulepia Cribrum. Near Ringwood ; June.

Limacodes Asellus. June.

Stauropus Fagi. Larvæ on oaks ; June.

Notodonta trepida. Larvæ on oaks ; June.

- Notodonta Chaonia.* Ditto ; May.
 „ *Dodonea.* Ditto ; May.
Acronycta Alni. Larvæ on oaks ; June.
Diphthera Orion. At sugar ; June.
Ceropacha ridens. Reared from larvæ found on oaks ; April.
Cymatophora Oo. June.
Stilbia anomala. August.
Mythimna turca. At sugar ; June.
Luperina Cespitis. September.
Triphæna subsequa. At sugar ; July.
Chersotis Agathina. On heath ; August.
Agrotis saucia. At sugar ; September.
Orthosia neglecta. On heath and at sugar ; August.
Dasycampa rubiginea. At sugar ; October.
Epunda lichenea. September.
Hadena lutulenta. September.
 „ *æthiops.* September.
Aplecta occulta. August.
Xylina semibrunnea. At sugar ; October.
Catocala sponsa. Larvæ on oaks ; July.
 „ *promissa.* Ditto.
Nola strigulalis. Trunks of trees ; May.
Ennomos illustraria. April.
Boarmia cinctaria. Trunks of oaks ; May and June.
Cleora viduaria. Ditto.
Mæsia favillaciaria. Flying ; May.
Ephyra orbicularia. Fences ; May.
Eupithecia variegata. Trunks of oaks ; May.
Sterrhopterix nigricans. May and June, (Zool. 2178).
 „ *opacella.*

Except *Peroneæ* and *Sarrothripus*, which in some seasons abound in old hawthorn trees, but few Tortrices of note have been taken here. Among the Crambidæ, *C. silvellus* is, I think, the only rarity ; and the Tineidæ have almost entirely escaped notice : the reason doubtless being that collectors have been too much engaged with the larger moths to attend to the smaller ones. Yet in such a fine and wide locality, there must be many fine Tortrices and Tineæ to reward the attention of those collectors who, having recovered from the primary fever of taking only large species, have subsided into the milder state of Micro-Lepidopterology. Who will lead the way ?

As might be expected, many fine Coleoptera occur here ; some are enumerated Zool. 2179.

J. W. DOUGLAS.

6, Kingswood Place, Lee, August 10, 1852.

Proceedings of the Entomological Society.

August 2, 1852.—J. O. WESTWOOD, Esq., President, in the chair.

The following donations were announced, and thanks ordered to be given to the donors:—Professor Zetterstedt's '*Diptera Scandinaviæ disposita et descripta*,' 11 vols. 8vo.; by the Author. '*The Zoologist*' for August; by the Editor. '*The Literary Gazette*' for July; by the Publishers. '*The Athenæum*' for May; by the Editor. '*Revue et Magasin de Zoologie*,' Nos. 4 and 5, 1852; by M. Guérin-Ménéville. '*Entomologische Zeitung*' for July; by the Entomological Society of Stettin. '*Annals of the Lyceum of Natural History of New York*,' Vol. v. No. 2; by the Lyceum. '*Life of the Rev. W. Kirby, M.A., F.R.S., F.L.S., &c.*,' by the Rev. John Freeman, M.A.; by the Author. '*Insecta Saundersiana. — Diptera*,' part 3; by W. W. Saunders, Esq.

The President also announced, that Miss Bromfield, of Ryde, had presented to the Society the whole of the entomological library, containing many rare and costly books, the collection of insects, and the cabinet, of her late brother, Dr. William Arnold Bromfield; for this munificent gift the Society passed a special vote of thanks.

The following is a list of the books presented:—

ADMIRAL, *Lepidopterous Insects*, folio, 1774.

ALBIN, *Historia Insectorum Angliæ*, 4to. 1731.

„ Ditto, English edition.

„ History of Spiders, 4to. 1736.

CEDERHOLM, *Fauna Ingrica Prodr. (Insecta)*, 8vo.

CLERCK, *Aranei Suecici*, 4to. 1757.

CRAMER, *Papillons Exotiques, et Suppl.*, 5 vols. 4to., coloured.

CURTIS, *British Entomology*, royal 8vo., 16 vols. in 8.

DENIS ET SCHIFFERMULLER, *Syst. Verz. der Schmetterlinge*, 4to. 1776.

DE GEER, *Genera et Species Insectorum*.

„ *Mémoires pour servir à l'Histoire des Insectes*, 7 vols. 4to.

DONOVAN, *British Insects*, 8vo., 16 vols. in 8.

DRURY, *Insects*, 3 vols. 4to.

„ *Illustrations of Natural History*, 4to., 3 vols. in 1.

ENTOMOLOGICAL MAGAZINE, 5 vols.

ERICHSON, *Die Käfer der Mark Brandenburg*, 1 Band, 1—2 Abth.

FABRICIUS, O., *Fauna Grœnlandica*, 8vo. 1780.

FABRICIUS, *Entomologiæ Systema et Suppl.*, 5 vols. 8vo.

„ *Genera Insectorum*, 8vo.

„ *Entomol. Philosoph.* 8vo.

„ *Mantissa Insectorum*, 2 vols. 8vo.

FRISCH, *Beschreibung von Allest. Insecten in Deutschland*, 1 vol. 4to.

- FUESSLY, Verz. der Schweiz Insect.
 „ Archives des Insectes.
 „ Nues Magaz. der Liebhaber, 2 vols. 8vo.
 GEOFFROY, Histoire Naturelle des Insectes de Paris, 2 vols. 4to.
 GOEDARTIO, Metamorph. &c. Insectorum, 12mo.
 GYLLENHAL, Insecta Suecica, 4 vols.
 HARRIS, Exposition of English Insects, 4to.
 „ Aurelian, folio, 1778.
 „ Treatise on American Insects, royal 8vo.
 HAWORTH, Lepidoptera Britannica, 8vo.
 HORSFIELD AND MACLEAY, Annulosa Javanica, 4to.
 KIRBY, Monographia Apum Angliæ, 2 vols.
 „ Fauna Boreali-Americana, 4 vols. 4to.
 KIRBY AND SPENCE, Introduction to Entomology, 4 vols. 8vo.
 LATREILLE, Genera Crustaceorum et Insectorum, 4 vols. 8vo. 1806.
 „ Considerations Générales, 8vo.
 LEWIN, Prodr. Entomol. (Lepidopt. N. S. Wales).
 LYONNET, Œuvres Anatomiques.
 „ Recherches, &c.
 MAGAZIN der Entomologie, 2 vols. 8vo.
 MEIGEN, Europäische Schmetterl., 3 vols.
 MERIAN, Insects of Surinam, folio.
 „ Histoire des Insectes de l'Europe.
 MOUFFET, Theatrum Insectorum, 1634, 2 copies.
 PERCHERON, Bibliographia Entomologica, 2 vols. square 8vo.
 RAY, Historia Insectorum, 4to. 1710.
 REAUMUR, Mémoire des Insectes, 6 vols. 4to.
 ROEMER, Genera Insectorum, 4to. 1789.
 ROESEL, Insect. Belust. 4 vol. 4to.
 ROSSI, Mantissa Insectorum, 4to.
 SAMOUELLE, Entomologist's Compendium, 8vo. 1819.
 SAY, American Entomology, 3 vols. 8vo.
 SCHAFER, Icones Insectorum, 4to. coloured.
 SCOPOLI, Entomologia Carniolica, 2 copies.
 SEPP, Histoire Naturelle des Insectes de Surinam, 3 parts.
 SMITH, American Insects, 2 vols. folio.
 STEPHENS, Illustrations of British Entomology, 12 vols.
 „ Systematic Catalogue of British Insects, 8vo.
 „ Manual of British Beetles.
 STOLL, Punaises, 4to., 1788.
 „ Cigares, 4to., 1788.
 WILKES, English Butterflies and Moths, 4to.
 WOOD, Index Entomologicus, 2 copies.
 ZETTERSTEDT, Insecta Lapponica, 4to.
 Mr. S. Stevens exhibited Graphiphora ditrapezium, reared from a larva found at Leith Hill, Surrey.
 The President exhibited two curious instances of monstrosity in the hive-bee, one in a male, having the left antenna terminated at the end of the first joint by a knob,

and the right hind-foot having a small round plate instead of the usual process; and the other example being a queen, in which one of the fore-pair of legs was exceedingly short.

Mr. F. Smith exhibited specimens of *Œcophora lacteella*, bred from corks of wine-bottles by Mr. Felkin, and also reared by himself from nests of *Bombus Raiellus*, in which the larvæ fed upon the wax. He also exhibited *Bombus nivalis*, Zett., a new British species, taken in Shetland by Mr. John White; and *Pompilus variegatus*, taken by himself last month near Wakefield, where the males were plentiful, but only one female was captured. He likewise exhibited *Batriscus venustus*, one of the rarer Pselaphidæ, taken in the nest of *Myrmica rubra*.

Mr. F. Grant exhibited several specimens of *Hypera tigrina*, a new British species of Curculionidæ, bred from wild carrot last July; specimens of *Coleophora Onosmella*, found on *Echium vulgare*, and *Sciaphila Perterana* reared from larvæ on heads of groundsel; all found near Dover last month: likewise *Coleophora Hemerobiella*, from larvæ found on pear trees at Patney.

Mr. Wing exhibited part of a French wine-case, perforated by galleries of larvæ, probably of *Cossus ligniperda*.

Mr. Waring exhibited specimens of *Crambus uliginosellus* and *Penthina Capræana*, bred from sallow from West Wickham, and *Tortrix Viburnana*.

The President read descriptions of three new species of *Paussus*, from the collection of Herr Dohrn, President of the Entomological Society of Stettin.

Mr. F. Smith read some 'Notes on the Development of *Osmia parietina*, and other British Insects.'

The Secretary read the conclusion of Mr. Wm. Varney's paper on the habits of various insects.—J. W. D.

*Some Account of the Country of the River Solimoens, or Upper
Amazons. By H. W. BATES, Esq.*

THE Amazons, from the mouth of the Rio Negro upwards, is named by the Brazilians the Rio Solimoens. A different name is given to this part of the river, apparently from the circumstance that the Rio Negro, at its mouth, seems to be a continuation of the main river, or rather an equal branch to that of the upper river. But in all its grand features the Solimoens shows itself to be the main stream,—the same white turbid current, and the same general appearance of the forests that clothe its banks. In the course of my travels I spent a whole year on this upper river, and now proceed to give you a short account of it, as far as my want of conveniences at the present time will admit.

I left the city of the Bana of the Rio Negro on the 26th of March, 1850, for the little town of Ega. The voyage occupied thirty-five days, slowly moving along under the banks of the river. It was the rainy season, the waters were rising, only wanting about 5 feet of high-

water mark ; and the whole breadth of the river was one vast roaring torrent, carrying along on its surface tracts of grass and aquatic vegetation, and trunks of vast trees. To travel slowly for thirty-five days along a monotonous country, in the midst of tropical rains, you may imagine to have been very tedious. The vessel was a small one, belonging to Ega, manned by eight stout Indians of the Cucáina nation, a people dwelling within the Peruvian frontiers. The master was a young Bahian, and besides him was a rough specimen of a Portuguese on his way to Ega to trade. The Indians were a quiet, rather apathetic, but hard-working set of men, speaking only the *Lingoa Geral*, or general language of the aborigines, a euphonious idiom, compounded by the early Jesuits from the most generally used languages of the original tribes, and spoken now by all the half-civilized Indians. Our mode of progress was almost solely by warping along by the tree-trunks on the river-banks. The trade winds of the lower Amazons are neutralized before reaching the mouth of the Rio Negro, and this is almost the only mode of progress for the larger vessels on the upper river. From sunrise until long after sunset it was the laborious daily work of our Indians, to carry the cable incessantly ahead to some convenient tree-trunk, and haul up the vessel to the spot, only for the same process to be repeated.

I reached Ega on the 1st of May. The situation of the town is exceedingly pretty, on a sloping grassy meadow, on a point of land formed by the junction of a small creek with the Teffé. The entrance to the Teffé is very striking. Leaving the white rapid current of the main river, with its monotonous scenery, you enter a narrow channel, about 100 paces in breadth, of quiet black-dyed waters, its banks clothed with a more sombre forest. Moving along about two leagues, it opens abruptly on a vast expanse of water, 5 or 6 miles broad, and of immense length. Here the little town appears quietly reposing on its green sward, encircled by a white sandy beach, on which the swell from the *lake*, as it is called, rolls with a pleasant dreamy murmur, and a line of sombre virgin forest forming the back ground. In Ega I remained until the month of August, making only a few short excursions in the neighbourhood. In that month I visited a little village called Caiçara, about 30 miles further westward ; here I remained three weeks. Caiçara is situated at the mouth of a small affluent of the Amazons, which also expands into a wide sheet of water a short distance from its embouchure. The months of October and November I spent in constant rambles on the waters and through the forests of the main river ; it being then the height of the dry season, when

the river teems with turtle, and all the inhabitants are out on the vast beaches and islands of sand exposed by the falling waters, for the purpose of manufacturing oil from the eggs of the turtle, or salting fish and *manatee* for consumption during the rainy season. In the month of March, 1851, I left Ega finally for Pala ; the voyage to the Bana, which occupied so long a time in ascending the river, we accomplished in descending in six days.

Thus was occupied a whole year in this luxuriant part of the Amazons. The whole country is nearly a dead level, the only elevations being occasional cliffs of a variously-coloured clay, called Tabatinga, averaging about 80 feet above high-water mark. These clayey elevations occupy only small tracts, both on the north and south banks of the river ; probably the river frontage occupied by the cliffs does not occupy more than 10 linear miles of the whole distance between the mouths of the rivers Negro and Teffé. The whole remaining part of the region appears to be alluvial land, that has been covered at some time or other by the waters of the Amazons. This alluvial valley is of immense breadth, if we may judge from the time it takes to reach the high lands up the branch rivers on either side of the river. Up the Japurá I was told it took one month's constant travelling, in a large boat, with six paddles, to reach the first rapids, although, it is true, not in a due northerly direction. Up the Teffé it occupies in the same way twenty days. The breadth of the valley may be estimated at 200 miles. On the lower Amazons, below Santarem, the alluvial valley is much narrower, the high lands bounding it being visible both on the north and south sides nearly at the same time. The whole of this immense region is one uninterrupted, lofty, and dark, but luxuriant forest. On the lower Amazons I had not seen anything to equal it, in the size of the forest trees and in the depth and richness of the virgin soil. I did not see a single acre (except the sandy islets in mid-stream) throughout my rambles, that was not occupied by forest. Such uniformity of scenery is of course monotonous, but the varied foliage, the diversity of trees, the pendulous drapery of climbing plants clothing the water-frontage, the rolling crowns of the gigantic leguminous trees, contrasting with the fringing fronds of the palms, all vary the effect. In fact, the eyes open to the sense of beauty in form, variety, and colour, would not be easily wearied, even with the constant presence of these interminable forests.

Regarding the zoological denizens of these domains, I am afraid what I have to say will destroy the grand picture which is generally formed on the subject. The descriptions of the abundance and

uproar of animal life in the Amazonian forests which we read in books of travels and physical geography, give a very exaggerated idea of the fact. They are copied from the works of the illustrious Humboldt; whom we cannot accuse of exaggeration; what he describes was probably what he really witnessed in some limited district, some particular fertile valley near the head waters of the river, where only he saw the Amazons; and his description has been made to apply to the whole Amazonian region. He describes the uproar of the animals to be terrific at dawn and sunset, and at the approach of storms; that the jaguars, monkeys, birds, and so forth, combine together to form a regular uproar. But throughout the whole of the Amazonian forests where I have travelled, nothing has struck me so much as the silence of animal life. The few cries of animals or voices of birds heard, are not sufficient to impart the animation of life to the sombre forests. Flora seems to have usurped an universal empire, and the oppressive heat appears to deaden the animation of the zoological world. It is a mistake, moreover, to suppose that an equatorial climate and luxuriant forests are necessary or even favourable to the great development or the abundance in individuals of the larger quadrupeds. The contrary view has been successfully advocated by Darwin, and forms one of the many grand generalizations worked out by him in the narrative of his voyage. The larger of the South American quadrupeds are not very abundant in the Amazonian forests. The tapir is occasionally seen; and three or four times only have I heard the suppressed bark as it were (it is not a roar) of the jaguar: once I saw the black tiger. The smaller species of monkeys, of the genera *Cebus*, *Midas*, and *Haples*, are the Mammalia most frequently seen, and are certainly abundant both in species and individuals; but their presence is never made known by loud noises: a quiet chattering, which might be mistaken for the chirping of birds, with the falling of fruit from the trees overhead, alone betraying their presence. The most striking of all the animal voices is that of the howling monkeys. In the upper Amazons they are heard occasionally at sunrise and sunset, and sometimes in the heat of the day, but generally at a distance. When they are near, their roar is certainly terrific; I can compare it to nothing so well as to the wind howling through rocky caverns. It is a noise so unearthly, that, heard unexpectedly for the first time, it would fill the mind with the most melancholy and fearful forebodings. The forests of the Solimoes are inhabited by many species of monkeys which are unknown on the lower Amazons, or on the eastern coast of the continent: some of them are of large size and of very rare occurrence.

Birds, too, are not at all obtrusively abundant: small flocks of a green paroquet are seen almost every day; but the larger parrots and macaws are rare.

The waters teem more with animal life than the forests. Three species of aquatic Chelonians are in abundance. In the season of high water they retire to the remote creeks, pools, and lakes, which are hidden in the depths of the forest. In the month of July, when the waters are falling rapidly, the adult animals leave their retreats, for the purpose of depositing their eggs in the sands on the main river. This is called the migration of the turtles, and is a thing well understood by the inhabitants. The young turtles remain in the inland pools; as the waters fall, the channels connecting these pools with the main river dry up, and they remain throughout the dry season imprisoned in these solitary places, in water almost tepid, where they feed and fatten on the mud, and the fruits that fall from the surrounding trees. Although three species of turtle only occur in numbers, there are many species of the family inhabiting the country, some of them of extremely rare occurrence. The large turtle, when full grown, is 4 feet long; it deposits its eggs in the sand, to the number of 120, in the month of September. From the eggs the inhabitants manufacture oil, and the flesh is excellent food. Every family in Ega has its pond of turtles in the gardens attached to the houses, where a stock is kept nearly all the year round. The Tracajá is only about half the size of the turtle; the eggs are one half smaller than those of the large turtle, and are not used to any extent in the manufacture of oil. At the beginning of the dry season, the inhabitants capture great quantities of Tracajá. The turtle no one is allowed to disturb on the sand-banks, as the whole river is placed under regulations every year by the authorities in the towns, in order to provide for the safe deposit of the eggs, and thus secure equal benefit to all the inhabitants who choose to manufacture oil. The Tracajás are under no such protection, and great is the havoc annually made amongst them. Whole families of women and children go out to the sand-banks shortly after sunset and turn over the animals as they issue from the water to deposit their eggs. The third species mentioned as abundant, is the Aiyussá or Pityú. It is about a foot long when full grown, and readily recognized by a short carinated elevation on the dorsal line of its shell. It deposits its eggs about a month before the large turtle, so that at the time when the people are on the sands excavating the eggs of the latter, the young of the former are hatched, and are taken by basketfuls early in the morning. It is curious to watch the little animals, as I

have done, issuing from the sand at a distance of more than a mile from the water, and immediately tracing the direct and nearest course to it.

Besides the turtles, the river swarms with a great variety of fishes ; there are also two species of porpoise, besides the manatee. But the waters have tenants far more disagreeable than any of these, in the shape of four or five species of alligator. In retired creeks and lakes they abound to an incredible degree. Whilst I was at Caiçara, I accompanied my kind entertainer, Senhor Innocencio de Faria, to the lake up the river, on one occasion, with a large party of Indians, to fish with the drag-net. At every haul of the net we captured some half-dozen alligators, large and small, of the two common species, Jacaré-uassú and Jacaré-tinga. The largest we got, however, was not more than 8 feet long. I was rather surprised to see none of the party injured by them, although about twenty persons, men and boys, were in the water together, and began to think the alligator not so dangerous a beast as it is described to be ; in fact, I waded into the water myself, and assisted with the net. I got an Indian to secure the largest Jacaré-uassú, bind its jaws and legs, and on our return to the village to let him loose among the dogs, the Indians and I irritating the beast with poles. It presently seized hold of the end of the pole I held, and nearly wrenched it from my grasp ; so I finished the sport abruptly by rapping him smartly on the crown of the head, which killed him instantly. The alligator is a cowardly beast when faced boldly, and knowing this feature of its character, the Indians are not afraid of it ; but when an opportunity offers of seizing a person off his guard at the edge of the water, it becomes bold. It most frequently carries away women and children, and several sad accidents occurred whilst I was in the district.

The insects of the upper Amazons, to which I paid more particular attention, are generally different in species from those of the Delta of the river. In diurnal Lepidoptera, out of about 300 to 350 species I noticed, 130 are peculiar to the district. In the virgin forest, on my voyage up the river in the wet season, I noticed a great scarcity of insect life ; but at the commencement of the dry season in the neighbourhood of Ega, a vast number both of species and individuals made their appearance. The greater portion of the handsome species of *Papilio* and *Nymphalidæ* were attracted by the lines of sediment at the edge of the water as the river retired. Besides these, many of which have proved new to science, there was an incredible abundance of several species of *Colias* : they covered the moist sandy beach in

some places in dense phalanxes, or spread themselves over large areas, forming an appearance like *Ranunculi* in a meadow in England. As the season advanced they disappeared, and during the months of rising water, namely, from November to March, none of the beautiful creatures that enlivened the season of the ebb, were to be seen.

The seasons and climate in the Solimoens offer some points of difference from those of the district of Pará. The year in Ega is divided according to the rises and falls of the river, with which accord also the dry and wet periods. The fall commences generally about the middle of June (in 1850 on the 18th), and continues to the middle of October, with the interruption of a partial rise (called *repiquete*) of a few inches in September. The difference between high and low water mark is from 40 to 50 feet. From the middle of October to the middle of January a larger *repiquet* occurs, with frequent rains. The rise is probably about 15 feet. From the end of January to about the middle of February, it again falls partially, accompanied by fine dry weather. This latter season is called the summer of the *Umaré*, a kind of wild fruit, much esteemed, which ripens during that period of dry weather. Thus the Ega year is divided into four seasons, two of dry weather and falling waters, and two of the reverse.

Besides these seasons, the month of May offers a curious meteorological phenomenon, peculiar also to the upper river. This is, the duration of cold southerly winds, blowing regularly across the forests. The temperature is sometimes so cooled, that the fish die in the river *Teffé*. The period during which these winds prevail is called by the inhabitants the "*tempo da friagem*," or cold weather, and is regularly expected annually, though it varies much in intensity, and period of duration.

This vast region of the upper Amazons, of which I am giving you so imperfect and brief a description, is certainly one of the most imperfectly known countries of the earth. There is perhaps no tract, of equal fertility and habitableness, so thinly peopled. The greater part is still in the possession of numerous tribes of utterly savage aborigines,—people who have rarely or never seen the face of the white man, retired and isolated, the tribes only being acquainted with their immediate neighbours, with whom they are generally at war. The courses of the many branch rivers on whose banks lie the settlements of the savages, are as yet unknown to Europeans, such as the *Purús*, the *Quary*, the *Juruá*, the *Japurá*, the *Icá*, the *Jutahé*, and others, all rivers little inferior in size to the *Rhine* in Europe. They are only visited by petty traders of Ega, who exchange hatchets, knives, and

trinkets for salsaparilla, copaiba, and hammocks made of twine from the Tucú, a species of palm. One article of export the savages deal in, which is scarcely so legitimate an object of trade, namely, children of both sexes, who, I was told, were prisoners taken in predatory excursions, and whose parents are immolated, but they themselves carried off and readily exchanged for cutlery with the Ega traders. At Ega they are employed as domestic servants.

The rivers chiefly frequented by the traders are the Japurá, on which dwell many nations of friendly Indians; the Icó, and the Juruá. The mouths of these large affluents of the Amazons are all within four or five days' voyage of Ega; the two former, which lie on the northern banks, are subject to intermittent fevers, the latter, on the south side, is entirely free from endemical diseases, and was described to me as teeming with valuable productions, the forests abounding with salsaparilla, valuable timbers, and India-rubber, the waters swarming with fish. The Juruá is inhabited by about ten distinct nations of Indians, the most remote of which are the Catoquinos, whose country lies along the frontiers of Brazil, Bolivia and Peru, from the Jutahi to the Tefé. The immediate banks of the main river are now not peopled by any nation of savages, the original tribes having long since either retreated to the more retired streams, or become amalgamated with the whites; but in Ega, individuals of many of the neighbouring tribes may be seen. I enumerated twenty-five distinct peoples. Many of them are distinguished by the pattern of the tattooing on the face, and all of them, when first brought from their birth-places, spoke their peculiar languages, and each nation or tribe utterly unintelligible to the others. Although the number of distinct tribes of aborigines is thus considerable, the aggregate population is very small, and is scattered over a large surface. Many tribes, from what I could learn, possessed few settlements, and could not consist of so many as a thousand individuals each. Thus a district of fertile country, having an area about equal to France and Germany together, covered with a luxuriant forest, and throughout having a marvellous depth of rich virgin soil, does not contain more than 30,000 or 40,000 inhabitants.

The Lake of Ega, as it is called, is in fact the expanded bed of the Tefé, which, descending from the mountains of Bolivia, spreads itself over a larger bed in the alluvial level of the Amazons, before discharging its waters into the fuller and more powerful current of the main river: this lake, as I have said, is of vast extent. The Tefé, near its junction, runs east and west; above Ega it curves into a southerly direction. The lake is deep, and clear of islands or shoals, and sur-

rounded by a country of great fertility and healthfulness, not only rich in natural productions, but capable of yielding in abundance most kinds of tropical produce, especially coffee and tobacco. Nearly all the branch rivers of the upper Amazons, in the same way, have expanded beds or lakes within a few miles of their embouchures, the channels by which they communicate with the trunk stream being of small breadth. I have not seen this phenomenon mentioned in works on physical geography, or attempted to be accounted for. I suppose it is owing to the main river always having a fuller and swifter current, because I have always noticed at the junctions of these larger affluents (whose waters are *black*, whilst those of the Amazons are *white*), that this tribute of waters flows very slowly away from the mouth, and creeps feebly along the banks of the river on the same side on which it is situated. The volume of water they discharge appears small in comparison with the size of the rivers, and does not issue forth boldly into the main stream of the Amazons. Moreover, the entrances to these rivers have seldom a perceptible current. On approaching, then, the main stream, they appear to shrink from the encounter, and spread their waters over wide beds in the flat alluvial valley. However this may be, these lakes add much to the beauty and the economical advantages of the country. Their banks are healthful and fertile, free from mosquitoes and other insect pests so annoying on the main river, and their waters are navigable for large vessels, which have a clear way right to the Atlantic. I entered several of these lakes, besides the Tefé and the Caiçara. The Quarry, about half way between the Purús and the Tefé, forms a still larger expanse of water than the last-mentioned. From the Quarry upwards, on the same side, follow successively the Xipixúna, the Catuá (a very large lake teeming with valuable natural productions), the Jutéca, and the Caimabé. The entrance to the last is not more than 80 paces wide, but it immediately opens on an expanse of water of inexpressible picturesque beauty. A dark line of high land, covered with sombre forest, marks its boundaries, but the bed of the lake is sprinkled with innumerable islands, their verdure of a vivid hue, and swarming with water-fowl.

Throughout these beautiful and little-known solitudes, inhabited by a few hospitable people descended from Europeans, with a small Indian population attached to them, there scarcely ever occurs a deed of violence; a mild indolent character, and an amiable charitableness; being the characteristics of the mixed white and Indian inhabitants. The whole country, with the exception of some of the branch rivers, is free from serious epidemic diseases, although the mean temperature of

the year may be considered 82°, the same as at Pará. The few Europeans travelling there, enjoy robust health. Life has but few cares; a spacious mud hut, whitewashed, and thatched with palm-leaves, each family constructs for itself; the rivers teem with turtle and fish, the forests with delicious fruits, and a small clearing, or even the earthy river's edge when the waters decline, yields sufficient mandioca root for the year's consumption at the cost of a few days' labour. But the facility of living, and the want of ambition, cause a laxity of morals fatal to the advancement of the people and the development of the resources of the country. In the hands of the Anglo-Saxons, at some future day, what a wealthy country it may become!

HENRY WALTER BATES.

Note on an unusual occurrence of the Red-breasted Merganser.—The red-breasted merganser is only found in Norfolk and Suffolk as a winter visitor, and the adult males are seldom obtained but in severe seasons: it may, therefore, be worth recording that one of these birds, in full adult male plumage, was seen at Lowestoft during the third week of July, in the present year. When seen, the bird was flying low, and was passing southward over the Denes which adjoin a portion of the beach at that part of the coast lying a little to the north of the town of Lowestoft.—J. H. Gurney; Easton, Norfolk, August 25, 1852.

Note on the Rev. G. Gordon's List of Moray Fishes (Zool. 2456, 3480).—In the careful and elaborate list of the fishes of the Moray Firth, by the Rev. G. Gordon, published in the 'Zoologist' for May and June, the author has stated the numbers of species from his list which he believes to have been found in Orkney and Shetland. His numbers are not quite accurate, as instead of 70, those found amount to 75. The total number of species in these islands, also, amounts to 102, instead of 97. This list would include many of his rarer species, such as *Trachypterus Vogmarus*, *Gobius unpunctatus*, *Lepidogaster bimaculatus*, &c. The occurrence of many of these has not yet been published, so that Mr. Gordon could not have had any opportunity of obtaining correct information; but I hope that ere long this deficiency will be supplied.—Wm. Balfour Baikie, M.D.; Haslar, July 24, 1852.

Note on a Variety of the Broad-nosed Eel.—A broad-nosed eel, of 18 oz. in weight, was taken this week from some mud under a brick archway of a water-course, at Lexham, in this county, which, instead of being the usual colour, was of a bright gamboge yellow, darkest and brightest on the back and tail, and paler on the sides and head. The only part of the fish which did not partake of this golden hue was the usual silvery line between the throat and the vent. I think the yellow was quite as clear and as bright as that of the gemmeous dragonet, and perhaps even more so.—J. H. Gurney; Easton, Norfolk, August 7, 1852.

Note on the Genus Gobius.—During a stay of some months in the island of Malta, in the winter and spring of 1851, I had some good opportunities of observing the habits of a species of goby which was common in the rock pools of the coast. As it does not appear, from a careful comparison of specimens with the drawings and descriptions of *Gobiadæ* in Yarrell's 'History of British Fishes,' to belong to our native Fauna, I append a short description. Fin-ray formula :—

D. 6, 14; P. 17; V. (P); A. 11; C. 16.

Colour a very pale brown, mottled and spotted with black: head depressed, with a longitudinal furrow extending along the top to the commencement of the first dorsal fin; under jaw rather longer than the upper: tail rounded: ventral fins united as in the genus *Gobius*. Length of the specimen described about 2 inches, but I have since seen others of 4 or 5 inches long. In vol. i. p. 281 of Yarrell's 'British Fishes,' in speaking of the genus *Gobius*, he says, "The species of this genus are easily recognised by the peculiar form of the ventral fins; the short anterior rays, and the long posterior ones, on each side, being united together, making a circle, with which they have been supposed to possess the power of attaching themselves to rocks, by forming a vacuum." Now having kept one of the species described alive for several weeks, in a large earthenware vessel (which was daily replenished with sea-water), in company with some blennies and other small fish, and having watched closely at all times of the day, and by candle-light, the habits of the various inhabitants of my vivarium, there appears to me no doubt but that the goby adheres to surfaces by the disk formed by the union of the ventral fins; for it is able to remain stationary upon the almost perpendicular sides of the vessel, without any movement, even of the pectoral fins, whilst the blennies, its companions, are quite unable to rest upon a surface unless considerably shelving. Moreover, the goby, when about to fix itself on the glazed sides of the vivarium, drops, as it were, the ventral disk, which is evidently in contact with the surface.—*William C. P. Medlycott; 23, Montpellier Road, Brighton, August 18, 1852.*

Capture of the Fishing Frog (Lophius piscatorius) near Runcorn.—A fine specimen (4 feet long) of the fishing frog was found stranded on a sand-bank, in the Mersey, near Runcorn, on Friday last, the 28th instant, by some fishermen. When found it appeared to have just died, and had evidently used most strenuous efforts to gain the receding tide, as the skin underneath the tail was almost worn through with its working on the sand.—*W. Fell; Warrington, 5th mo. 31, 1852.*

Anecdote of a Hunting Spider.—Last week I was amused by an action of one of the hunting spiders so often seen prowling about on sunny walls, &c. Observing one of these zebra-marked individuals on a Venetian blind, I watched an opportunity to effect its capture with a quill. With their usual vigilance, however, it immediately detected the end of the quill resting on the intervening lath, and cautiously retreated a step or two, with its head turned to the suspicious object; then, as cautiously advancing, it sprang on the end of the quill, and, after clinging to it for a second, leaped back and concealed itself on the other side of the blind. The spider no doubt mistook it for an insect, possibly from its partaking of the tremor of the hand.—*Geo. Guyon; Richmond, Surrey, August 16, 1852.*

Supposed Capture in England of the American Black-bellied Darter,
(*Plotus Anhinga*). By the Rev. ALFRED CHARLES SMITH, M.A.



Black-bellied Darter, (*Plotus Anhinga*).

It is not until after the expiration of above a year since the following circumstances came under my notice, that I now venture to record

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in the 'Zoologist' some account of the supposed capture near Poole, in Dorsetshire, of the *Plotus Anhinga*, or "Black-bellied Darter" of America; and even now, I do so with some hesitation, and would first beg to caution the readers of the 'Zoologist' against setting this down as an undoubted *bond fide* British bird, from the solitary instance of its occurrence here given, the particulars of the capture being very far from satisfactory.

It appears, after repeated and diligent inquiry, that the bird in question was shot by a young man of the name of Cripps, in the neighbourhood of Poole, in Dorsetshire, some time in the month of June, 1851; and that it was sent *in the flesh* to Mr. Dangerfield, a fish-monger at Devizes, who also is a dealer in stuffed birds. When I say that the bird was sent to Mr. Dangerfield in the flesh, I should add, that the body had been removed, but evidently recently, and that the wings, legs, neck, &c., still remained in the flesh, when Mr. Dangerfield prepared it for stuffing. I do not think the removal of the body from the bird is at all conclusive that it had been brought from any great distance, as this is so common a practice when no opportunity occurs for immediately sending the specimen obtained; and I have myself, on several occasions, received from friends birds in like manner partially prepared. The most unsatisfactory part of the evidence regarding this bird, is, that the person who is said to have shot it is now an emigrant in Australia, and all information about it necessarily comes to us at second-hand through the preparer of the bird, (Mr. Dangerfield). I feel, that having admitted my knowledge of its capture above a year since, I should be exposed to the deserved censure of my ornithological friends for carelessness and gross negligence, in omitting to make inquiries at once, while the person who shot it was at hand, did I not exculpate myself by stating that I first heard of and saw the bird only on the eve of my departure for a somewhat extended tour in Germany and Italy, and was thereby precluded from making any inquiries at the time.

That the bird in question was not at all known by those who possessed it, will be very apparent from the name they had given it, and under which it was shown to me, that of "Ibis;" nor indeed, though I knew their mistake, could I at all say what it was, until I had an opportunity, a few weeks back, of showing it to my friend Mr. Alfred Newton, whose name is well known to the readers of the 'Zoologist,' and who at once declared it to be the *Plotus Anhinga* of America. To the same gentleman I am indebted for most of the information I have since gained regarding the whole genus *Plotus* in general, and the spe-

cies Anhinga in particular, as extracted chiefly from Nuttall's 'Manual of American Ornithology,' Temminck's 'Manuel d'Ornithologie,' the 'Encyclopædia Britannica,' and the 'Encyclopædia Metropolitana.'

From reference to these works, it will appear that great confusion exists among authors with regard to the number of species in this genus, some enumerating four, others two, and some, as Vieillot, only one; Temminck, however, seems to have decided the matter, and determines two species, *viz.* : —

1. *Plotus le Vaillantii*, *Tem.*

L'Anhinga roux du Sénégal, *Buff.*

The Rufous-winged Darter.

Which species only inhabits the hottest parts of Africa.

2. *Plotus Anhinga*, *Linn.*

L'Anhinga, *Briss.*

Plotus melanogaster, *Wilson*, *Vieillot*, *Buffon*, &c.

And which bears the apparently irreconcilable English names of "the black-bellied" and "the white-bellied" darter; but which, in all probability, may both be accurate descriptions of the plumage of the same bird, in different stages; the former referring to the adult, the latter to the immature bird. It is (as I conceive) the adult bird of the "black-bellied darter" which has now visited our shores.

According to Nuttall, the *Plotus Anhinga* is "an inhabitant of the Southern States of North America, and its geographical range does not extend farther towards the North than Cape Fear river in North Carolina, while southward it is known in Cayenne, Brazil," &c.; others again say that it is "largely spread over both North and South America;" and Wilson adds, that "wherever the limbs of a tree project over and dip into the water, there these birds are sure to be found."

The striking peculiarities of this bird are its long, curved, snake-like neck, and its small head, which have given occasion to its being described as a snake joined to the body of a bird; and hence its common name in America of "Snake-bird;" and amongst the Hottentots of Africa of "Schlanghals-vogel," or serpent-necked bird, as applied to its rufous-winged congener: the neck of these birds being constantly in motion, excepting only in flight, when it is stretched out stiffly in a horizontal line with the tail.

Such being the character, appearance, and usual habitats of the *Plotus Anhinga*, now come the questions, Whence did our bird come when he was shot near Poole? Did he come of his own accord so far

from home, or did he escape from a ship? Mr. Newton and I examined the plumage, especially the tail-feathers and wings, minutely, and our opinion is, that they bear no marks of confinement. Again, the time of year in which it was killed (June), and the place (on the coast of Dorsetshire), make it quite *possible* that, as a straggler, it reached our shores of its own free will. Whether this was the case or not, seems to me very problematical, and the absence of the person who shot the bird, leaves us in ignorance of all the details of its capture, still, on the whole, I am inclined to believe it was a wanderer by choice or accident from the New to the Old World, although it met with a somewhat warmer reception here than it anticipated. And though I am most strongly opposed to any straggler to our shores being at once admitted into our lists of British birds on an equal footing with those that are indigenous, and most common, yet I cannot but think it has an equal claim to such a position with the American scaup, the American wigeon, and others.

I subjoin a figure (Zool. 3601), and also a description of this singular bird in Mr. Dangerfield's possession, which will be seen to tally exactly with Nuttall's account of the "Black-bellied Darter" (*Plotus Anhinga*), and to leave no doubt that it is that bird.

Total length from point of bill to end of tail, 34 inches; length of bill from tip to gape, 4 inches; neck, 14 inches; wings, from shoulder to extreme point, 13 inches; tail, 10 inches; greatest breadth of body, 4 inches.

General colour of plumage above and below, glossy black shot with green; on the upper parts of the back are many small specks and spots of white, which become larger on the wing-coverts and secondaries, until they assume the form of oblong streaks and bars of white: upper part of the neck dusky gray, gradually becoming darker lower down, till it joins with and assumes the same glossy jet black as the under parts: throat and chin dusky white: under side of neck generally of a lighter shade than the upper: wings black, extending to about a third of the tail: tail long, narrow, rounded; at the base black, the outer feathers crimped at the outer edge, very dirty white at the tip: legs strong, thick, short; claws very much hooked: bill straight, sharp, and furnished with a small pouch under the lower mandible.

I should add that the drawing is made from the bird exactly in the position it now holds. A comparison of this drawing with the figure in Nuttall's 'Manual of American Ornithology,' will at once show that although so exceedingly long in proportion to its breadth, it is, when

alive, by no means an inelegant bird, nor, with a gracefully curved neck and a horizontal body, does it appear the strange distended figure here represented from the stuffed specimen before me. The drawing is made, as nearly as possible, on the scale of one fifth of the original size; and I may add, for the benefit of those who have never seen a bird of this description, that notwithstanding its appearance, it is very accurate in all its proportions as well as in its markings.

ALFRED CHARLES SMITH.

Old Park, Devizes,
September 9, 1852.

On the Habits of the Kiwi-kiwi (Apteryx Mantelli, Bartlett), in Confinement. By ALFRED NEWTON, Esq.

"ABOUT 1638 as I walked London streets I (*) the picture of a strange fowle hong out upon a cloth (*) was and my selfe with one or two more then in company went in to see it; It was kept in a chamber, and was a great fowle somewhat bigger then the largest Turkey Cock, and so legged and footed but shorter and thicker, and of a more erect shape, couloured before like the breast of a yong Cock fesan, and on the back of dunn or deare coulour. the keeper called it a Dodo and in the end of a chimney in the chamber there lay an heap of large peble stones, whereof hee gave it many in our sight some as bigg as nutmegs, and the keeper told us she eats them (meaning to digestion) and though I remember not how farr the keeper was questioned therein yet I am confident that afterwards shee cast them all agayne."—*L'Estrange's MS.*, p. 9.

WOULD that good Sir Hamon had given a fuller account of the "great fowle" than the one I have above quoted; we should not then be now-a-days in doubt whether or no the subjects of King Charles I. were really gratified with the sight of a veritable *Didus ineptus*, all alive. However, I do not apprehend that any naturalist, two hundred and odd years hence, will have any hesitation in believing that in 1852 the Zoological Society of London possessed a living *Kiwi-kiwi*; and I trust that the people of that day, from various sources, among which the full, true, and particular account given by Mr. John Wolley (*Zool.* 3409) will hold a high rank, will entertain a very correct idea of *Apteryx Mantelli*, even if the *Kiwis* do, "ere long, share the fate of the larger races in that wonderful creation of which they are, with the *Notornis* discovered by Mr. Mantell, perhaps, the last remaining types."† But there is a chance, and I hope a tolerably good one,

* A small hole in the M.S., of the size of a silver threepenny piece.—(*J. W.*)

† Report of Sec. Z. S., December 1851, p. 12.

that so interesting a genus as *Apteryx* may not be passing away as might be feared ; for I hear that a Maori chief, lately in London, said that he possessed several, living in an inclosed piece of ground in New Zealand ; and as he promised to send specimens of their eggs to one of our energetic collectors, it is probable that they breed in semi-confinement.

Having on the night of the 18th instant seen the Kiwi-kiwi in the Zoological Gardens under very favourable circumstances, I am induced to think that such readers of the 'Zoologist' as have not been equally fortunate, may be interested by reading an account of its proceedings on that occasion. I must first of all bear witness to the extremely minute accuracy of the details of this bird's appearance and behaviour given by Mr. Wolley, to which I have already alluded, and must take it for granted that the readers of the 'Zoologist' have already studied it as it deserves. Mr. Wolley has anticipated, in many instances almost in the very words, what I should have said on the subject, and it will be difficult for me to avoid repeating his expressions in some cases.

Having therefore, on the aforesaid evening, the pleasure of being accompanied by Mr. Wolley, my brother and myself arrived at the Gardens shortly after 8 o'clock ; and after having witnessed the putting to bed of the two chimpanzees, seen the hippopotamus take his farewell bath for the night, and watched the young elephant washing down a few wisps of hay with an evening draught afforded him by his mother, we arrived opposite the Kiwi's cage in the ostrich-house a little before 9, that building being tenanted as formerly described by Mr. Wolley, and the furniture of the apartment being the same now as then, with the exception of a pot of water introduced at that gentleman's suggestion, being the first to which the bird had had access probably since leaving New Zealand, certainly since his residence in England. On taking up our position daylight was rapidly failing, and as darkness increased, there began to reign a silence broken only by a few faint guttural sounds from the cage of the Weka (*Ocydromus fuscus*), or a slight rustling of the straw in those of the ostriches, or the wheels of a departing cab conveying visitors from the Gardens. Our attention was however soon excited by a succession of loud snaps from the box containing the *Apteryx*, followed by an occasional blow against its sides, and a good deal of sniffing ; these noises lasted a few minutes, and then, from behind the curtain, the principal actor in the exhibition we had come to see stepped forth, slowly and with high deliberate action, his body elongated, his beak depressed. The pot

of water appeared directly to attract his attention, and the next instant we had audible proof of the situation of his nostrils, by seeing him with the tip of his beak only in the water, and hearing the noise he made by blowing bubbles through them. The water seemed to afford him great gratification, and after blowing bubbles in it for some time, now only with the tip of his beak submerged, but at other times with nearly the whole of it plunged beneath the surface, he proceeded to drink copiously; apparently opening his beak under water to fill it, then closing it and holding it horizontally while he swallowed the draught, this last operation being distinctly visible when the light of the "bull's-eye" lantern, with which we were provided, was turned on him. He next made the tour of his apartment and ate a few earth-worms, his high action, by alternately elevating and depressing his body, having a singular effect as he deliberately walked along. About this time the Weka set up a shriek, beginning like the bark of a puppy, and ending like the clamour of a stone-curlew on the wing; of this noise the Kiwi took no notice, nor did he subsequently take heed of the squeaking and rustling of a mouse which was in the ostrich's loose box: but the keeper's footsteps on the paving-stones outside alarmed him, and he returned with gravity to his box; thus finishing the first act of the play.

The second act was not long in opening. After a few snuffles, and a slight snapping of the beak, the Kiwi-kiwi again stood before us, advancing in an almost erect posture to the front of the den, when, standing upright, he turned round quickly once or twice, giving me much the idea of its being the action analogous to that of any ordinarily constructed bird, say, a duck, when it flaps its wings after having come out of the water, and it certainly struck me at the time that if I could have discerned those appendages in the Apteryx, I should have seen them in motion.* After perambulating the den a few times, he returned to the water, and bubbled, splashed, and drank for some minutes, using the same motions as I have before described; the splashing being principally performed by sharply moving his bill in a lateral direction through the water with a kind of jerk. He then proceeded to his store of earth-worms, which were in an earthen pot, and not turned out on the top of the turf as when Mr. Wolley last saw them,

* I think it right to say here that neither of my companions noticed this feat, but I am sure I am not deceived as to in what it consisted; and I think it probable that as the bird at the time was standing near the bars, and just in front of me, at one end of the cage, it was almost out of the range of their sight; it certainly was in deep shadow.

and having eaten a few, he ascended the hillock, picking about the loose grass that lay on its surface, a dry tuft of which he tossed over his shoulder in a kind of indignant manner. I should here remark, that those who have the management of the bird thought it best for his health not to moisten the heap of earth, fearing that it might, if too wet, interfere with the delicate organization of his nostrils, in consequence therefore of the late hot weather, it had become so exceedingly dry, that the worms, if allowed to bury themselves in it, were usually found in the morning dead and shrivelled: this led to the abandonment of the plan of turning them out on it, and the Kiwi therefore, having, as I suppose, learned from experience the unprofitable nature of his hunting-ground, has given up the practice of boring into it for them,—a thing I was sorry for, as I wished to see him perform that operation. I trust, however, that as on this night the bird showed an evident partiality for water, that not only may the hillock of turf be again moistened, but that he may be daily supplied with as much as he likes to drink. The Apteryx then, after having entertained himself by parading about and sniffing a good deal, retired to his dormitory.

It then occurred to us all, that it would be as well to see whether the Kiwi-kiwi would like to wash himself: and his keeper, on being summoned, procured a flat pan, which, when filled with water, was introduced into the cage. The noise made by opening and shutting the sliding door, had the effect of making him continue a longer time than usual in seclusion; but at length he emerged for the third time, and though drinking more copiously, and making a greater noise in the water than before, he never even placed his foot in the bath, nor appeared to wish to do so; and after making the round of his den in silence (broken only by a series of singular sounds from the Weka, which would lead one to suppose that that restless bird was at last not only sound asleep, as indeed it ought, for it was past 10 o'clock, but snoring), he retired again to the deal box in the corner, not over pleased with the glare of the lantern, I think, which accompanied all his wanderings. However, the nature of all animals is to brave almost anything to appease their hunger, and the Kiwi-kiwi, not having completed his meal, did not prove an exception to the rule: he accordingly returned a fourth time to the stage, where he stayed a considerable time, chiefly occupying himself with paying attention to the pot of worms; sundry sharp snaps of the beak at times affording sufficient proof that an unfortunate annelid was bolted, while every now and then, I suppose on the occasion of a worm becoming refractory and getting

crossways in his throat, certain husky sounds suggested a difficulty of deglutition : this continued for perhaps ten minutes, when the Apteryx, sniffing as he went, and stopping once to scratch his scurfy beak with his ponderous toe, retired again to his bed-room.

Mr. Wolley now proposed that we should come to a closer acquaintance with the Kiwi, and compel him to exhibit his mode of defence, as the fifth and last act of the entertainment. This we were quite willing to do, and accordingly entered his apartment, and let down the side of the sleeping-box, which had at its bottom a bed of bran about three inches deep ; this act excited the New Zealander's indignation, and he instantly reared himself up with his back against one corner of the box, and struck out fiercely in the manner which has been so graphically described by Mr. Wolley : and having referred to that admirable account, I can say no more of his mode of defence without danger of repetition ; though, for myself, I was hardly prepared from it to feel the sound pat that the bird inflicted with the sole of his foot. We continued to engage him in combat for some minutes, and during that time he once uttered a curious kind of sound, which Mr. Wolley says was the growl or grunt peculiar to him, but as it took me by surprise, and was of momentary duration only, I can in no way describe it, and it was, unfortunately, not repeated a second time. After having satisfied ourselves that the Kiwi-kiwi would permit no liberties to be taken with him without resenting them, we retired, leaving him to pass the rest of the night in peace.

Mr. Wolley has already in the 'Zoologist' so admirably described the gait of the Apteryx, and its appearance when moving, that I will not say more on the subject, except to remark that when the bird "pirouetted,"* after the manner above stated, one could not help seeing in it a ludicrous resemblance to what is called a "dancing" bear, and the appearance of the bird stretching itself out at full length, almost made one yawn. I believe I am right in saying that no hitherto unnoticed peculiarity of habit in this bird has been lately observed by his keepers, but since the occasion of his lying on his side, which Mr. Wolley records, he has been seen several times in that attitude. The Kiwi would now (July) appear to be moulting, for a great number of his hair-like feathers were to be discovered among the bran in his box,

* I did not intend to have used this word, but I can find none other that so well expresses my meaning. The curious action I have above described had nothing in it analogous to the "strut" of a gallinaceous bird. The Apteryx merely gave himself a thoroughly good stretch, and in doing so he turned round once or twice.

and we brought away with us a small bunch as a reminiscence of our visit.

I have only to add that my limited acquaintance with this individual Kiwi did not impress me with very exalted ideas of his intelligence. Although, from having received no nocturnal visitors since Mr. Wolley's last interview on the evening of the 28th of February, he could not have become in any way accustomed to the light of a lamp, he showed no fear at the sight of it, yet there was nothing in any of his actions to show that he minded its presence. He certainly was aware that something unusual was taking place, but I feel sure he did not know what. He might, it is true, have taken the "bull's eye" for a moon, but anyhow I am certain he never looked at it in the manner that any other bird that I am acquainted with would have done, under similar circumstances. The presence of the light did not, I think, cause him to perform any action that he otherwise would not, but I think it might have had the effect of checking him in some of his feats. He appeared to trust more to the sense of smelling than that of sight. The frequent touching of the walls and ground with his beak, and sniffing, make me think that he uses that appendage as a blind man uses his stick, not to support his body, but to reconnoitre his * path.

In conclusion, I only hope I shall not have tired my readers with these minute particulars. But few people have seen the Apteryx eating and drinking, and I flatter myself that if the race of Kiwis is doomed to become exterminated from the face of the earth, and living examples of them numbered among things that were, then this record of a careful observation of the habits of one which, although they be restrained by confinement, and watched for a brief space of time only, may not be devoid of interest to future naturalists; for what would we not now give to know more of the habits of the dodo, even in confinement, than can be collected from the scanty notice of it by Sir Hamon l'Estrange, assisted though it be by the pen of Strickland and the model of Bartlett!

ALFRED NEWTON.

Elveden Hall, July 24, 1852.

* Throughout this paper I have made Kiwi-kiwi of the masculine gender, but there appears to be little doubt that this celebrated antipodal is a female.

Notes on the Birds, Fishes, and Insects observed near St. Margaret's Bay, Kent. By JOHN JOSEPH BRIGGS, Esq.

St. Margaret's Bay is situated perhaps four miles from Dover, near the South Foreland lighthouse, on the Kentish coast. It is buried in a deep recess, between high and prominent chalk cliffs, and contains a few houses occupied chiefly by fishermen, and the coast-guard stationed there for the prevention of smuggling. During the month of May, in the present year, I paid a visit to this remote spot, and picked up the following gleanings in Natural History.

On the most inaccessible parts of the cliffs overlooking the sea, between St. Margaret's and Dover, I found the guillemot breeding; but I was told that this bird existed there in much more limited numbers now than formerly. The eggs were found resting lightly on the shelves of the cliffs, without nest; and I can bear testimony to the truth of the assertions which naturalists have made, that the eggs of this bird vary greatly both in ground-colour and markings. Of the three which I was able to procure, one had its ground-colour greenish white, and its broad end banded with a ring of deep black blotches; its sides varied with a few spots, but none at the smaller end. Another egg had a large black blotch on the centre of the broad end, from which diverged numerous spots, which became smaller in size as they approached the narrow end; ground-colour white. A third had some well-defined but irregularly-shaped black spots scattered over it upon a greenish white ground. These eggs were procured on the 26th of May, and incubation had just commenced.

Another species of bird which I found breeding on these cliffs, more especially near the Foreland lighthouse, was the common gull. I procured fourteen eggs on the 26th of May. The nests were situated on the cliffs, composed of marine plants, and usually contained two eggs, occasionally three. These eggs were procured by a person who was suspended over the face of the cliff by a rope, like a spider hanging by his web, an operation which has frequently been described. Common as these gulls are, there is something very pleasing in their habits and manners. How delightful is it to stand on some prominent crag, with the ocean rolling at its base, and watch these birds of snowy whiteness winging their spirit-like flight through the deep, deep space which intervenes between us and the unresting waters! Or to see a party chasing each other over the bright blue waves; one, perchance, picking up a glistening mackerel, whilst the others are endeavouring

to steal away his prize, and are pursuing him so unweariedly that he is generally obliged to drop it, in order to escape the annoyance of pursuit. Nor is it less pleasing to see the solicitude which they manifest for the safety of their young, as they fly round and round their nests with restless anxiety, uttering their low plaintive cry of distress, occasionally alighting on the hoary scalp of some prominent crag, and for a few moments standing motionless, like statues cut from the chalk.

On the ledges of the cliffs before alluded to, the sparrow-hawk breeds; and in my rambles I met with several pairs of these birds. The merlin, too, inhabits these cliffs in summer, and is said to breed there. Of the truth of this I have no doubt, as I frequently observed a pair which haunted a particular part of the cliff, and from their partiality to one spot, their manner, and also from their being seen there at that period (June 23rd), I think they must have had a nest in the neighbourhood. Instances of this bird breeding so far south, are, I believe, considered by naturalists extremely rare.

On the sea-shore I met with the stonechat, the hooded crow, and the raven. The latter bird, I am told, breeds annually on the highest parts of the cliffs, generally on the same rock, but not on the same ledge. The common skylark was most abundant on the high grounds above the cliffs, and I never remember to have heard the song of these birds so sweetly delivered.

A young shark was caught by some fishermen, I believe in the mackerel-nets, about the beginning of May, and about four miles from the shore. When I saw it, decomposition had taken place, but I procured the teeth: it measured 5 feet in length. In rambling along the shore, I was much struck with the numberless pieces of mackerel — heads, tails, and bellies of the fish — which were washed upon the shingle. This destruction was occasioned by the voracious dog-fish, which preys upon the mackerel; and when I examined some that were captured in the nets of the fishermen, and discovered their formidable character, I was not surprised at the destruction effected by them.

To persons coming from an inland situation, it is an interesting sight to witness the shoals of mackerel moving through the sea. You first discover a dark patch upon the waters, and having recourse to a telescope, soon perceive that this patch is nothing less than a shoal of these fishes on their migratory passage. And amusing lively fellows they seem to be, skipping out of the water in a playful manner almost unceasingly, something after the manner of a bleak in fresh water. I do not know the average weight of a mackerel, but I weighed a pair, which appeared to me unusually large, and found them to weigh 5 lbs.

When crossing the Channel in a vessel, between St. Margaret's Bay and Calais, we fell in with a remarkable number of insects, which had evidently endeavoured to migrate to England from France, or *vice versa*, and were driven into the sea by an adverse gale. They consisted chiefly of the common house-fly, but I noticed other species, and one yellow and one white butterfly. They lay floating on the surface of the sea, and all were quite dead. On either side of the vessel, whilst it sailed for more than a mile, as far as I could see, these insects lay thickly strewn. This circumstance occurred about three or four miles from Calais. It appeared to me as if thousands of six or seven species of flies had congregated together, as swallows do in autumn, and in a vain attempt to cross the sea in a body, had perished in the effort.

St. Margaret's Bay furnishes the botanist with many interesting plants, amongst which the various species of *Orchis* stand most conspicuous.

JOHN JOSEPH BRIGGS.

King's Newton, Swarkeston, Derbyshire,
August, 1862.

Some Account of the Zoological Museum at Haslar Hospital.

By DR. BALFOUR BAIKIE.

ALLOW me, through the medium of your pages, to direct attention to a zoological museum, which is, I think, at present, less generally known than it deserves to be. I allude to the one in connexion with Haslar Hospital, which was first established by Sir Wm. Burnett, Director-general of the Medical Department of the Navy, in 1827, and has ever since been with him an object of unceasing care. For the last fourteen years it has been under the immediate direction of Sir John Richardson, by whose able and active superintendence it has gradually attained to its present condition. It is particularly rich in its osteological collection, and the various specimens prepared by the present and late Curators, the Messrs. Barron, father and son, are, besides their intrinsic value and importance, most beautifully and artistically executed.

The number of human skeletons is eight, among which are one Benguelian, two Peruvian, and one Australian.

The human skulls amount to nearly 150, among which may be noted that of a Dyak, and several of Australian and ancient Peruvian races.

There are about 150 skeletons of mammals, besides 259 skulls. Among the former may be mentioned the following:—*Ovibos moschatus* and *Ovis montana*, from Arctic America; *Hippopotamus amphibius*, *Thylacinus cynocephalus*, *Echidna aculeata*, *Ornithorhynchus anatinus*, *Halichore Dugong*, and a rare species of *Troglodytes*: and among the latter, *Delphinus Fitz-Royi* and *D. frontatus*; as also the frontal bone and horns of *Strepsiceros Koodoo*.

The skeletons of birds, which number nearly 300, include *Geophaps Smithii*, *Cariama cristata*, *Chionis alba*, and a species of *Aptenodytes*. There are likewise 356 skulls, and numerous preparations of *sterna*, *tracheæ*, and other individual parts.

There are 29 skeletons and 19 skulls of *Reptilia* and *Amphibia*.

And lastly, there are upwards of 170 specimens of skeletons of fish, containing among others rare species of the genera *Vastres* and *Trachypterus*.

The number of stuffed *Mammalia* is not great, chiefly owing to want of room for display and arrangement. The stuffed birds, though more abundant, are limited from similar causes. Among this class may be mentioned fine illustrations of *Helotarsus ecaudatus*, *Gampsonyx Swainsoni*, *Strix tenebricosus*, *Epimachus paradiseus*, *Nestor Australis*, *Tanagra striata*, *Phibalura flavirostris*, *Hylactis Tarnii*, *Graculus Grimardii*, *Phaleris cristatella*, *Brachyrhynchus antiquus*, *Nettapus pulchellus*, *Apteryx Mantelli*, *Strigops habroptilus*, *Graucalus hypoleucus*, *Cracticus picatus*, *Grus Australasianus* and *Mycteria Australis*; also good series of the family *Picidæ*, of the genera *Geospiza*, *Cactornis*, *Camarhynchus* and *Phytotoma*.

The fishes comprise nearly 600 stuffed specimens, and upwards of double that number in spirits. Among them are many rare and possibly undescribed species, which have been lately under the consideration of Sir John Richardson. A rare shark may be here noted, *viz.*, *Prionodon limbatus*.

Among the *Invertebrata* the *Mollusca* are most abundant, numbering nearly 2500 species: of these the most interesting genera are *Pholadomya*, *Clementia*, *Panopæa*, *Microtis* (*tuberculata*) and *Cryptochiton* (*annulatus*). Among the less common species are a *Scaphella* (nearly unique) and *S. Turneri*, *Trichotropis bicarinata*, *Ancillaria tricolor*, *Macgillivrayia pelagica*, and *Lophocercus Sieboldii*.

Among about 180 *Crustacea*, the more important are *Echidnocerus cibarius*, *Oethra scruposa*, *Parthenope horrida*, *Cercops Holbölli*, *Arcturus Baffini*, and *Saduria entomon*.

These two last divisions have lately been arranged by Mr. Arthur

Adams, the former according to the arrangement of Mr. Woodward's useful Manual, and the latter following the classification of Milne-Edwards.

There is a good show of spiders, the collection being especially rich in the genera *Mygale* and *Nephila*.

The insects have been arranged by Messrs. Adams and Barron. The Lepidoptera number 520, the Coleoptera nearly 1200 species. Of these latter, the families best represented are the Buprestidæ, Rhyncophora and Cetoniadæ, the latter including some very rare species of the genera *Goliathus* and *Stephanorhina*.

The collection likewise includes a fine set of casts of fossils from the Himalayas, presented by the East India Company; and numerous miscellaneous articles less directly connected with Natural History. The principal hindrance hitherto has been want of space, whereby numerous highly interesting specimens are hid from view. This year, after long asking, a grant was obtained from Government for an additional room, which is now in progress. I trust, however, I have said enough to show that the Museum well merits a visit; and as additions from all parts of the world are frequently augmenting its treasures, I doubt not, well managed as it is, that it will ere long vastly increase in scientific value.

WM. BALFOUR BAIKIE, M.D.

Haslar Hospital, Gosport,
September 6, 1852.

Remarks on certain Districts in the West of England; with Notes on Coleoptera recently captured in them. By T. VERNON WOLLASTON, Esq., M.A., F.L.S.

HAVING had opportunities during the present summer of exploring many distant spots in the West of England, I propose, in the accompanying short paper, to give a rough sketch of a few of the localities visited, with such remarks on the more characteristic species of each as may prove useful to collectors whom chance may at times lead into the same districts.

It has so often fallen to my lot to investigate portions of the western counties, that I believe I am able to form a pretty correct estimate of the general character of their Coleopterous Fauna, which obtains (I think, with tolerable uniformity) throughout the country between the two Channels. And, although there are certainly a few scarce

forms, which, in England, have not, it would appear, been elsewhere observed, yet I believe I err not in considering the south-western corner by far the most unprofitable portion of our island for an active entomologist to be stationed in, who is more anxious to obtain good sport as a reward for his labours, than the mere knowledge of local distribution and negative evidence, which, though it be interesting to special observers, for special purposes, is scarcely practical enough to satisfy the daily cravings and the *amor habendi* of hard-working naturalists. Unlike the easy collecting we are accustomed to in the more favoured East, miles of unprofitable country have often to be gone over, be it swampy moorland or iron-bound coast, where scarcely an insect is to be seen; or, at any rate, where the few which exist are so ordinary, and so sparingly dispersed, as to be scarcely worth the labour of obtaining them, more especially since the identical species are many of them to be met with in the utmost profusion in more central or eastern habitats. Whether it be the moisture of the climate, or the violence of the south-west winds, which, continually sweeping over the high central mass of Devonshire and the bleak, barren downs of Cornwall, present as great an obstacle to the development of animal, as they clearly do of vegetable life, I will not venture to suggest; yet certain it is, from observation, that insects not only become fewer in number in proportion as they are exposed to these external agencies of wind and water, but likewise, in many instances, diminish so considerably in stature as to be scarcely reconcileable with the normal types.

But to proceed to the notice of a few of the captures which I propose to register; and not confining myself to Devonshire and Cornwall only, the peculiar poverty of which, entomologically, I have thought it desirable thus far to dilate upon; I will trace out my line of wandering during the present summer, noting merely such few species, here and there, as may be considered more especially characteristic of my different centres of research. Commencing then with the neighbourhood of Dorchester, and in conjunction with my friend, the Rev. J. F. Dawson, I again visited the small but remarkable locality of Herringstone (more minutely described by me, 'Zoologist,' 1940), where a succession of springs, issuing out of the chalk hills, form a swampy valley, in winter-time nearly impassable. In one of these springs, in company with *Agabus uliginosus*, I took a single specimen of the rare *Agabus fontinalis*, *Leach* (a species known by a minute tooth on the inner curvature of the front claw), the only other example that has come under my observation, in British cabinets, having

been captured by myself in the identical pool in 1847. *Stenolophus vespertinus* and *Trechus luridus* occurred sparingly; but *Trechus consputus*, *Bembidium Clarkii*, *Dawson*, *Agonum picipes*, and *Omaeus anthracinus* were in the greatest abundance. *Gymnaëtron Becabungæ*, as formerly, was not uncommon; and a single specimen of the rare *Myrmedonia collaris* is the only other capture I need record at Herringstone.

Passing onwards, then, to the coast near Bridport, it was our principal object to endeavour to obtain, if possible, the rare little *Dromius quadrillum*, a single pair of which I formerly captured in the Bay of Freshwater (Zool. 1942), two miles to the eastward of that town. Failing in our researches for this insect, we spent but a single morning at Freshwater, which did not produce much. The minute *Dendrophilus minimus*, however, appears to be tolerably common about the roots of plants at the foot of the sand cliffs facing the sea. The pale variety of *Peryphus saxatilis*, hitherto only observed in the Isle of Wight, is abundant. *Brachinus crepitans*, also tolerably common; and two or three small species of *Ochthebius*, and some scarce *Brachelytra*, occurred under the rejectamenta deposited by the little stream which empties itself into the sea. A single specimen also of a *Peryphus*, with largely developed mandibles, and apparently new to the British Fauna, was captured by Mr. Dawson in the same spot. From Freshwater we passed on to Lyme Regis and Charmouth, where the insects are of much the same character as in the neighbourhood of Bridport. The pale variety of *Peryphus saxatilis*, as there, is everywhere common; and on the sandy slopes by the road-side to the westward of Charmouth, *Harpalus honestus* appears to be tolerably abundant.

Parting with my friend Mr. Dawson at Lyme, I pursued my course to Exeter, and from thence to the mouth of the Exe, where a narrow strip of sand, two miles in length, known as Exmouth Warren, and midway between the Starcross and Dawlish stations of the South Devon Railway, stretches out into a tongue-like waste opposite to Exmouth, from which it is, at its extremity, alone separated by the mouth of the river, there considerably contracted. At the root of this sandy bar, the railroad (which from Exeter skirts the banks of the Exe) makes a sudden curve, in a south-westerly direction, down the coast; exactly at which point the little hamlet of Mount Pleasant, upon the hill-slopes to the right, commands a magnificent prospect of the Warren, with the more abrupt shores of Exmouth on the opposite banks.

At the Mount Pleasant Inn I located myself for several days, to explore this peninsular waste, so productive-looking at first sight, that, had it been further east, I should have foretold a rich field for research. Having however had experience, as already stated, of the general barrenness of the West, I was not surprised to find it extremely unprofitable: and to all who stand a similar chance of being deluded to its shores by its prolific appearance, I would add a word of advice, not to remain at Mount Pleasant, but by all means to pass quickly on. I was there in the very height of the season for coast collecting (*i. e.*, in May), yet, with the exception of a single pair of *Harpalus discoideus*, I scarcely captured anything worth recording. The only two other Harpali I observed were the common *æneus* and *anxius*; and the four universal maritime insects of western England, *viz.*, *Ægialia globosa*, *Cnecorhinus geminatus*, *Opatrum sabulosum* and *Phylan gibbus*, would appear to be the principal inhabitants of the loose drifting sands on the side facing the sea. *Dyschirius thoracicus* and *salinus*, the common little *Lophopus pusilla*, and some minute Staphylinidæ, were abundant in brackish spots by the river's edge: which, with the exception of an example of *Myrmedonia limbata*, are the principal species worth mentioning from this most desert waste.

From Mount Pleasant I made my way, *viâ* Dawlish, Totness and Dartmouth, to the far-famed Slapton Ley, a large fresh-water lake of more than two miles in length, running parallel to the sea (and separated from it only by a road and a shingly beach) at about the central point of the Start Bay. This locality, I believe, has never been searched since the days of Bentley and Chant; nor, with the exception perhaps of Dr. Leach, am I aware of anybody who has ever explored it for Coleoptera at all. Consequently I anticipated, in this case at least, a rich harvest; and indeed had I reaped fruit in proportion to its very profitable appearance, I should have done well. As it was, however, like most other spots in the West of England, it numbered but few species. The shores of the lake are a positive desolation, but little occurring there beyond *Agonum marginatum*, *Peryphus rupestris*, and *Bembidium striatum*. By the smaller and more stagnant waters, however, adjoining, where the sedge was lying in great profusion, dead, upon the banks, vast numbers of Staphylinidæ, principally *Homalotæ* and *Philonthi*, abounded, with *Chlænium vestitus* and *Blethisa multipunctata*: but the numbers here of the common *Agonum marginatum* and *Peryphus rupestris* were truly prodigious, exceeding what I had ever observed of the same species elsewhere. On small grassy patches behind the beach, I obtained three species

of *Harpalus* as yet undetermined, one of which may possibly be new to the British Fauna: also, abundance of *Opatrum sabulosum* and *Otiorhynchus ligneus*; and, more rarely, *Dermestes undulatus* and *Phytobius 4-tuberculatus*. *Atomaria mesomelas* was common in sedgy places adjoining the Ley; where also, in old trees, the ravages of *Sinodendron cylindricum* were but too apparent.

But the most valuable capture remains yet to be recorded, an insect which pleased me most, being in fact the identical little *Dromius quadrillum* for which alone we had undertaken, albeit unsuccessfully, our expedition to Dorsetshire. Its habits are very remarkable. Instead of choosing grassy spots, or taking shelter beneath stones, as is the case with the *Dromii* generally, it selects the driest and most barren shingle, at a distance from the beach, — so loose and bare that even weeds are unable to exist upon it, where the insect may be seen darting from beneath in the clear sunshine, and as suddenly disappearing, much after the manner of the *Limnæa*, which I have taken, under circumstances somewhat similar, in North Wales and the Isle of Wight. It is difficult to speculate on what a voracious insect like the present can feed in such a position; for the smaller animals in a pebble-ridge so dry and shifting as to refuse nourishment even to a blade of grass, and having more the appearance in fact of a recently opened gravel-pit than anything else, cannot be very numerous.

From the region of the Start, I pursued my way to Kingsbridge, apparently a very unproductive district, where the clayey bed of the estuary (always, except during the highest tides, partially dry) and rocky shores proclaim at once the poverty of the spot. The only insects I could perceive inhabiting the crevices of the mud along the edges of the creek, were a few minute species of *Brachelytra*, and hosts of *Pogonus chalceus* and the common *Bradicellus pubescens*. By the field-sides on the rocks above, *Apion vernale* appeared tolerably abundant; but, with that exception, everything that I swept into my net was of the very commonest description.

Proceeding onwards, from Kingsbridge to Plymouth, I determined on devoting all my time to Mount Edgumbe, where, in addition to *Omius sulcirostris*, observed previously (so far as the United Kingdom is concerned) only in Scotland, I first discovered *Cossonus Tardii*, in May, 1844 (*Zool.* 702), an insect not found on the continent, and, up to that period, known exclusively as Irish. Various engagements, however, prevented me from devoting more than parts of two days to my favourite haunt: nevertheless, in that short period, I succeeded in

obtaining seventy-five specimens of *Cossonus* ; as of old, more especially abundant in decayed sycamores and under the loose bark of plane trees. Being most intent on procuring a good series of this insect, I searched for little else ; nevertheless, *Thanasimus formicarius*, a few species of *Cis*, and some minute *Brachelytra*, were tolerably abundant in the same spots. Upon the whole, my past experience entomological, in Devonshire and Cornwall, would point to Mount Edgumbe as decidedly the most productive locality in the two counties. Whether it be from the variety of altitudes we obtain in a small compass, the peculiarity of the soil, or the quantity of old timber which has been allowed to remain for centuries untouched both in the park and grounds, or perchance, which is not improbable, from a combination of all three, I am unable to say. Nevertheless, it does certainly appear that Mount Edgumbe possesses some peculiar advantages over the surrounding districts, being altogether an exception to the characteristically barren country of the "far West."

Crossing over from Plymouth into Cornwall, my next station of permanence was Newton Park, near Callington, where a remote and densely wooded country, the property principally of my friend, E. Collins, Esq., was before me. Constant rain, however, prevented a proper investigation of this very interesting district, which, but for my opportunities of exploring it formerly, might have left me with the impression that it also, like Mount Edgumbe, was an exception to the general rule. This however is not the case, for the valley of the Lynher, profitable as it may seem at first sight, and beautiful as it assuredly is in the picturesque, contains but little that is scarce. Troops of *Malthini* and *Telephori* are foremost to be observed ; which, with the large *Phyllobius calcaratus* and *Galeruca Capreae*, make their appearance everywhere. In the older trees I remarked the excessive ravages of *Sinodendron cylindricum*, which, with the common *Rhagia* and a small *Rhysophogus*, would seem to do the work of destruction pretty rapidly. In the flowers of the hawthorn I captured *Meligethes melanocephalus* not uncommonly ; and on thistles by the edges of the river Lynher, in the meadows below, *Rhinobatus planus* was tolerably abundant.

In the vicinity of Launceston, where I next took up my quarters, I did not obtain much ; partly because I searched but little, and partly because the weather was unpropitious. Nevertheless, I had so completely ransacked the neighbourhood eight years ago, that I the less regretted the few opportunities which occurred of renewing my acquaintance with it. A few species however might be recorded ; such

as *Elater bipustulatus*, abundant in Werrington Park; *Pachyta 8-maculata* at South Petherwin; *Aplotarsus testaceus* and *Cyphon deflexicollis* in the Rev. H. A. Simcoe's woods at Penheale—a locality perhaps the most profitable in the vicinity, and where I have formerly observed many rare insects, including *Leiodes cinnamomea*, *Phloiophilus Edwardsii*, *Phytobius Waltoni* and *Rhinonchus bruchoides*, both very abundant on the common *Polygonum Hydropiper*; as also *Pogonocherus hispidus*, *Chrysomela Banksii*, and the very scarce, though minute, *Tychus ibericus*, on which specimens alone its admission into the British Fauna (vide Dr. Schaum's note on the *Pselaphi*, Zool. 1933) rests. The woods at Penheale abound also with the typical Cornish Coleoptera, foremost amongst which, as in those at Newton, stand the *Malthini*, a genus which appears to be more developed in the damp valleys of the West than in any portion of England which I have hitherto investigated. The same might be said of the moist woods under the lofty Cheese-wring range at Trebartha, where also *Sitona cambrica*, usually a scarce species, is tolerably common. At Treneglos, where in September, 1844 (Zool. 750), I captured the rare *Lebia crux-minor*, a singularly dark variety of *Chrysomela geminata* is found on the common buck-bean, in a swampy part of the valley between that village and Warbstow; as also the rare *Gymnaëtron Veronicæ* of Germar, at Treglith, with *Thyamis holsatica* and *Encephalus complicans*; and *Lamprias chlorocephalus* on the open downs towards Tresmeer.

From this slight sketch it will be perceived how few really uncommon species occurred to me, in proportion to the amount of ground passed over during my present summer's campaign. Nor can I regard it in any respect as the result of accident, even though my passage in many spots was so transitory as scarcely to admit of a thorough research, since my past experience confirms the same fact, that insect life is really much scarcer in the south-western portion of England than towards the centre or the eastern. In a catalogue of the Coleoptera of Cornwall and the Scilly Islands, placed by me some years ago in the hands of the Natural-History Society of Truro, I enumerated nearly 700 species indigenous to the county; and it was remarkable how few scarce forms entered into my list. The opposite coast of the Bristol channel, however, is very different; which would tend to prove that longitude has less to do with the characteristic barrenness of Devonshire and Cornwall than other causes, be they geological or climatal, as yet but imperfectly investigated. Lundy Island, situated between the two, though most near, geographically, to Devonshire,

approaches closer, entomologically, to Wales, as I have elsewhere, and at considerable length, taken some pains to prove, (*Zool.* 898, 1753). Judging indeed from the general character of the insects themselves, and from their paucity, my own observation would tend to connect Devon and Cornwall more immediately with the South of Ireland, where the conditions of insect life are in every respect similar; receding in every case almost equally from the Welch type, while, *inter se*, there appears to be, as far as I am able to judge, but little difference.

And, in conclusion to this short notice, referring principally to the Coleoptera of Devonshire and Cornwall, I may just add, that returning through Somersetshire, I took the opportunity of investigating the sandy coast about Weston-super-Mare; where little however occurred to me beyond the ordinary insects usually abundant in brackish spots, such as *Dyschirius salinus*, *Notaphus ustulatus*, *Lopha Doris* and *pusilla*, *Ochthebius marinus*, *Achenium depressum*, *Atomaria terminata*, *Corticaria fuscula*, &c., which are familiar to every one who has searched similar subsaline districts. Passing on from thence into Monmouthshire, I located myself at Chepstow, to explore the region of the Wye. At its junction with the Severn, its Fauna is almost identical with that about Weston, but more especially with what I have observed in northern Lincolnshire, on the edges of the Humber; the self-same species occurring in each locality, with the exception however of *Pogonus littoralis*, which is found abundantly on the Wye, but which I have not remarked on the Humber banks. In other respects they entirely coincide; *Dyschirius salinus*, *Peryphus lunatus* and *concinus*, *Philothus æneus*, *Lopha Doris* and *pusilla*, *Heterocerus femoralis*, and another minute species, probably the sericans of Keisewetter; to say nothing of the elegant little Hemipterous insect, the *Salda pulchella* of Curtis, occurring in equal abundance in both districts. But, following the Wye from its junction with the Severn up to Chepstow itself, we find that the character of the insects entirely changes. Luxuriant woods here begin to clothe the lofty banks of the river, forming a large item in that lovely scenery for which the Wye has ever been so famous. In the portion of the woods between the ruins of the castle and the estate of Piercefield, I alighted upon a host of rarities, including, amongst many species which I need not record, a fine series of *Orsodacna chlorotica* (principally on the flowers of the common meadow-sweet), in all its varieties, *Cistela castanea*, *Magdalis Cerasi* and *aterrima*, *Ochina Hederæ* (abundantly in the old ivy which clusters upon the rocks), *Chrysomela laminata*, *Oömorphus concolor*, and several species of *Staphylinidæ*. And further up the

river, at Tintern, where I remained for a few days to investigate the spot, I had the good fortune to meet with abundance of *Synaptus filiiformis* (the *Ctenonychus hirsutus* of Stephens), one of the rarest of our British Elateridæ. It was extremely local, occurring only in a single small meadow, of a hundred yards in length, about half a mile to the south of the Abbey. I could only obtain it by brushing; and I believe it was off the *Polygonum Hydropiper*, that most of my specimens came. The edges of the river at Tintern produce most of the same species as they do below Chepstow, being extremely prolific however in minute Staphylinidæ, in addition to the salt insects there abundant. In the meadows, in company with *Synaptus filiiformis*, *Aplotarsus Quercus* was extremely common; also *Notaris bimaculatus*, *Tanymecus palliatus*, and a small *Cassida*, which I have not yet identified with any of the British species.

With these notes I will conclude for the present; merely adding that on my passage through Gloucestershire, I had the pleasure of taking the minute *Aspidiphorus orbiculatus* at Withington, on the Cotswold Hills, an insect which I had not before captured in England; as also *Gymnaëtron intaminata*, *Ceutorhynchus Urticæ* and *horridus*, *Phytobius 4-tuberculatus*, some scarce Anisotomidæ, and a single example of an extremely rare *Ophonus*, apparently undescribed, a pair of which were captured some time ago by the Rev. J. F. Dawson, in the Isle of Wight. And, shortly afterwards, at Avebury, on the Wiltshire downs, *Limobius fulvipes* and *Chætocnema Sahlbergii*, also species which I had not previously alighted upon, except in cabinets.

Since my return from Wiltshire, I have visited the coast of Kent, and Whittlesea Mere, with considerable success; but all observations on my captures in these localities I will defer until another opportunity. Suffice it now, if the few remarks I have offered on the Coleoptera, mainly, of the West, be of sufficient use to any of your correspondents to deter them from unfavourable spots, or guide their steps to better ones, should chance ever lead them into the districts here briefly touched up.

T. V. WOLLASTON.

25, Thurloe Square, Brompton,
August 20, 1852.

Capture of Mancipium Daplidice at Whittlesea Mere.—I took a fine specimen of *Mancipium Daplidice* near Whittlesea Mere, on the 22nd or 23rd of August last. It was at rest on the flower of the wild carrot. I was unable to get any more specimens, although I examined every white butterfly that I could find.—*E. C. Buxton; Spike-lands, Liverpool, September 11, 1852.*

Capture of Colias Edusa at Stowmarket.—It may be worth recording that I took a single specimen of *Colias Edusa* in my garden on the 2nd of September: I never saw it before in this neighbourhood. We are twenty-four miles from the sea. *Colias Hyale*, as I have already announced in your journal, was taken within three miles of the town last autumn.—*C. R. Bree; Stowmarket, September 17, 1852.*

Capture of Vanessa Antiopa near Stowmarket.—A very good specimen of *Vanessa Antiopa* was taken on the 30th of August, at Elmswell, six miles from this place, by Miss Lucy Marriott, daughter of the Rev. H. S. Marriott. Miss M., who is only nine years of age, was catching butterflies for her brother, a young entomologist a year older, when she obtained the rare prize. It was taken and let off three times before it was finally secured. The locality chosen by the fair *Antiopa* was a series of hurdles in close contiguity to the pig-sty! There is a considerable sized wood close to Mr. Marriott's house. This makes the seventh specimen of *Antiopa* which has been taken during the last few years in this neighbourhood.—*Id.*

Capture of Vanessa Antiopa near York.—I have the pleasure of informing thee that I captured the Camberwell beauty (*Vanessa Antiopa*) at Langwith, about three miles S.E. of York, on the 30th ultimo.—*Robert Crosland; Friends' School, York, 9th Mo. 4, 1852.*

Probable Mode of detecting the Larva of Polyommatus Artaxerxes &c.—The Ochill Hills around Logie and Menstrie produce this insect abundantly; so does Arthur's Seat, as well as other places round about: but of the larva, or its transformation, nothing is known. I would therefore suggest to entomologists living in these neighbourhoods, that by cutting a few yards of the turf which it frequents, and having it carted home, and again planted, and a fine net thrown over all to protect it from birds &c., they might be enabled to detect the larva. By the bye, Castle Eden Dene produces the Durham Argus; might not the larva of this also be looked for in this way, and, if found, compared with the above? This would at once determine whether they are different insects.—*John Scott; London Works, Renfrew, September 13, 1852.*

Capture of Charocampa Celerio near Tenterden.—A very fine male specimen of *Charocampa Celerio* was brought to me alive on Thursday the 16th; it had apparently but recently emerged from the chrysalis, being in the most perfect condition. It was found in a hop-oast, and is now in my cabinet.—*S. C. Tress Beale; Tenterden, September 21, 1852.*

Capture of Charocampa Nerii at Brighton.—On the 11th of September a specimen of *Charocampa Nerii* was taken in Montpelier Road, Brighton, by a young gentleman at school, while it was hovering about a passion-flower. He gave it to one of his companions, from whose hands it has found its way into my cabinet. It is a female, and in good condition, with the exception of the thorax, which was injured by its fluttering about in the net of its captor. The expansion of the wings is $4\frac{1}{2}$ inches.—*John N. Winter; Guy's Hospital, London, September 21, 1852.*

Occurrence of Notodonta trepida &c. near Berkhamstead.—I was fortunate enough to beat three larvæ of *Notodonta trepida* off oaks near Berkhamstead, in July, two of which are now in the pupa, and one unfortunately died. I also beat off oaks, at the

same place, two larvæ of either *N. Chaonia* or *N. Dodonæa* (I do not know the difference), which are now in the chrysalis. *N. palpina* I found in the same locality, feeding on the aspen, and have five in chrysalis. I also found seven or eight larvæ of *N. Dictæa* feeding on the aspen, but all but one unfortunately died. I had the good fortune to find two larvæ of *N. Dromedarius* here a short time since, feeding on birch, both of which are gone into the earth. The larvæ of *Orgyia Coryli* are by no means uncommon in Hertfordshire, on beech: *Notodonta Camelina* is also very plentiful. —*H. Harpur Crewe*; *Breadsall Rectory, near Derby, September 9, 1852.*

Captures of Lepidoptera near Stowmarket.—Among the rarer or local Lepidoptera which I take in this neighbourhood are the following:—

Speranza conspicuaria, May and end of July, on *Spartium Scoparium*.

Coremia Ligustraria, July, in lanes, flying about whitethorn.

Eupithecia Linaria, August, bred from the seeds of *Linaria vulgaris*, in the first instance by Professor Henslow, and since by myself.

Eucosmia undularia, July, in woods.

Eurymene Dolobrararia, July, ditto.

Micropteryx mansuetella, May, on *Mercurialis perennis*, in North-field Wood.

Tinea semifulvella, July, in woods, one specimen.

Geometra Papilionaria, July, ditto.

Phorodesma bajularia, July, ditto.

Chesias obliquaria, May, on *Spartium Scoparium*.

Eremobia ochroleuca, July, one specimen turned up out of the soil in the imago form by my gardener, while digging.

Ennomos Tiliaria, September, at the light of the lamp at my gate.

Angerona Prunaria, July, in woods.

Bradyepetes Amataria, June, in lanes, and in my garden.

—*C. R. Bree*; *Stowmarket, September 17, 1852.*

Capture of Tinea ferruginella at Leith.—During a visit to Leith last week, I took this insect flying in an out-house at mid-day. This, I believe, is an addition to the Edinburghshire list of Lepidoptera.—*Angus Campbell*; *London Works, Renfrew, September 13, 1852.*

Plutella Dalella.—I have taken some nice specimens of this pretty insect, and shall be glad to supply, as far as possible, any brother entomologist who may be in want of them.—*J. Johnson*; *Parsonage, Denby, Huddersfield.*

Occurrence of Pterophorus lithodactylus.—I have lately met with this insect in some numbers: should there be any collectors in want of it, I shall be very happy to supply them.—*Christopher Eales*; *Priestgate, Darlington, August 10, 1852.*

Captures of Hymenoptera &c. in Yorkshire.—I promised to furnish you with some account of my entomological doings in Yorkshire, and having just returned, I cannot do better than fulfil my promise whilst matters are fresh in my memory. The first impression left on my mind as constituting a marked difference between Yorkshire and the London district, is the immense abundance of the social Hymenoptera as compared with the solitary species, and also as compared with their occurrence near London, or, in fact, in any district which I have investigated in the South of England. On the borders of the woods, the nests of wasps are found in astonishing numbers, principally those of *Vespa vulgaris*; those of *Vespa rufa* are not by any means uncommon; and those of *Vespa Norwegica* are also occasionally to be met with, as well as of *Vespa arborea*. In stony fields on hill-sides I found colonies of *Myrmica rubra* in such

immense numbers, that were I to say they occurred under every stone, as applied to fields in general, I speak strictly according to truth. July is not a favourable month to an Hymenopterist; the spring insects are past, and the autumnal ones have not made their appearance: still, something may always be accomplished by diligent exertion. I searched in great numbers of ants' nests in the hope of meeting with parasites, but only met with a single species of Pselaphidæ — *Batrissus nigriventris*, an exceedingly rare insect, only three or four specimens having previously occurred in this country. It is mentioned by Aubé as an inhabitant of ants' nests. Earlier in the season I should in all probability have been more successful. Of the rare *Pompilus variegatus* I captured eight specimens, one being a male; this sex has not been previously taken in this country. I also captured a species of *Pompilus* new to our Fauna; it is allied to *P. gibbus*, but very distinct. Another fossorial insect appeared to be plentiful, which I had not previously captured in any locality, but have received several times from Scotland,—the *Crabro dimidiatus*. The only bee of any rarity which I met with was *Andrena Coitana*, but I was fortunate in observing both sexes enter the same burrow: the female proves to be *Andrena Shawella* of Kirby, the female which I have before described (Zool. 1919) being a variety of the same species. *Bombus fragrans* is not uncommon near Wakefield, the district which I investigated; and some of the commoner species abound in immense profusion, particularly *B. lucorum*. I have little doubt that in a district so beautifully varied by woods, hills and valleys, many species occur which do not appear in my list, which, for the sake of the locality, I subjoin: it includes every species of Hymenopterous insect which I observed.

<i>Zarea fasciata</i>	<i>Crabro vagus</i>	<i>Halictus abdominalis</i>
<i>Tenthredo viridis</i>	<i>leucostoma</i>	<i>albipes</i>
<i>arcuatus</i>	<i>elongatulus</i>	<i>Andrena albicrus</i>
<i>Athalia spinarum</i>	<i>obliquus</i>	<i>Coitana</i>
<i>Rosæ</i>	<i>albilabris</i>	<i>varians</i>
<i>Formica rufa</i>	<i>Diodontus minutus</i>	<i>Shawella</i>
<i>nigra</i>	<i>Passalæcus insignis</i>	<i>Megachile centuncularis</i>
<i>fuliginosa</i>	<i>Pemphredon lugubris</i>	<i>circumcincta</i>
<i>flava</i>	<i>Cemonus unicolor</i>	<i>Osmia bicornis</i>
<i>Myrmica rubra</i>	<i>Gorytes mystaceus</i>	<i>Nomada Fabriciana</i>
<i>lævinodis</i>	<i>Symmorphus elegans</i>	<i>ochrostoma</i>
<i>ruginodis</i>	<i>Ancistrocerus parietinus</i>	<i>flavo-guttata</i>
<i>Myrmica melanocephala</i>	<i>3-marginatus</i>	<i>Celioxys 4-dentata</i>
<i>Sapyga 4-guttata</i>	<i>Odynerus spinipes</i>	<i>Chelostoma florissomne</i>
<i>clavicornis</i>	<i>Vespa vulgaris</i>	<i>Anthophora retusa</i>
<i>Pompilus variegatus</i>	<i>Germanica</i>	<i>Apathus campestris</i>
<i>fuscus</i>	<i>rufa</i>	<i>Barbutellus</i>
<i>gibbus</i>	<i>Norwegica</i>	<i>Bombus muscorum</i>
<i>new species</i>	<i>arborea</i>	<i>senilis</i>
<i>exaltatus</i>	<i>Colletes Daviesana</i>	<i>fragrans</i>
<i>Nysson spinosus</i>	<i>Prosopis annulatus</i>	<i>lucorum</i>
<i>Trypoxylon figulus</i>	<i>Sphecodes gibbus</i>	<i>hortorum</i>
<i>Crabro dimidiatus</i>	<i>subquadratus</i>	<i>terrestris</i>
<i>cribrarius</i>	<i>Halictus rubicundus</i>	<i>pratorem</i>
<i>patellatus</i>	<i>flavipes</i>	<i>lapidarius</i>

—*Frederick Smith; August, 1852.*

Instance of Bees welcoming a new Queen, as soon as they had discovered the loss of their own.—Huber says that he never knew an instance of bees welcoming a stranger queen immediately after a removal of their own, and the discovery of their loss; Réaumur however asserted that “should the original queen be removed, and another presented to the bees, this new one will be perfectly well received from the beginning.” From the following account it will be seen that I have reason to incline to the opinion of the latter naturalist, though doubtless circumstances may occur when a stranger queen would *not* be so well received. Of all insects bees are perhaps the most impatient of strict rules. On the 19th of July last, early in the morning, I took from off one of my swarms of the current season, a box containing several pounds of fine honeycomb. Perceiving, when the bees taken originally in the box had rejoined their companions in the old stock, that it seemed to have an over-crowded population, it occurred to me that by simply removing the old stock, and substituting for it an empty box containing a little comb, I might tenant it with the surplus population of the before-mentioned stock, that is, if they would take a prolific young queen, which I had at command. I accordingly removed the full stock and put in its place the untenanted box. Then, after waiting some twenty minutes at the outside, till the bees returning from the field had, on alighting at the spot where their old hive stood, fully perceived their loss, and begun to show signs of disquietude, I quickly brought my young reserve queen, and put her at the entrance. Instantly she was seized hold of menacingly, by several bees, who appeared as if attempting to sting her, but in less than two minutes their menacing attitude was changed into one of respect, and, after gathering round her for a few minutes, the bees *en masse* drew her into the box, and I saw her no more until the 31st ult., when I caught her again, and found that she had both laid many eggs and reared a good many young bees, while the old removed stock has continued to thrive well, in spite of the large number of bees which left it for the experimental swarm. I may further mention, in evidence that this queen was treated with continued respect inside, as she had been outside the box, that the restlessness of the bees at once ceased, and they reconciled themselves very speedily to their change of abode.—P. V. M. Filleul; Ross, Herefordshire, September 3, 1852.

Note on the Temper of Humble Bees at a certain Season of the Year.—There is a period in the humble bee's life when its nature is most irascible at any interruption or detention from her nest; it is after laying the eggs of the neuters, and when she is anxiously awaiting their appearance: and doubly painful is the effect of a sting at that time. Afterwards, when her cares are lessened, her temper softens, and she proceeds smoothly on to complete her brood, that is, laying the eggs of the male and female in the cells principally prepared by the neuters. It is at this time that the Apathi may, with safety, insinuate themselves into the nest, so as to perfect Nature's design, that the male and female of the Bombi and Apathi may appear together. The following interesting anecdote of a humble bee, related in a letter from Mr. Murray to Mr. Kirby (Life, p. 406), must have occurred in the irritable stage of her existence:—

“A few days ago I was greatly amused with a large humble bee and wasp (*Vespa vulgaris*): the humble bee actually drowned, *vi et armis*, the wasp—no doubt for some delinquency. I saw the bee press upon, and hold it under the surface of the water till it was fairly drowned, and then fly off in triumph; the struggle, you may be sure, was severe. Perhaps the wasp had insinuated itself, an unbidden guest, into the nest of the bee, and the victor adopted this extraordinary mode of dispatching his enemy.”—Ed.

Occurrence of Locusta migratoria near Redcar.—Last Saturday a specimen of *Locusta migratoria* was captured by a boy near this place, and another seen in the village the same day; wind East, blowing fresh, as the sailors term it. — *J. S. Rudd; Redcar, September 6, 1852.*

Voracious Propensity of the large Dragon-fly.—A very clear morning in the middle of July last, found me within a short distance of Ben Nevis, and as the heavens showed no signs of misty-fying the view, I was easily tempted to make the ascent. I set off between 10 and 11 in the forenoon, and as it was excessively hot, I sauntered slowly on, now pausing at this bush, now at that, and giving to each one a hearty thrashing before parting with it. I was thus engaged when close behind me I heard the rustling of a dragon-fly's wings. I turned round, and perceived the creature seated near the edge of the brook by which lies the road, and busily engaged with something or other. I made a stroke and secured it in my net, and found that it was cutting a poor *Pamphilus* into a proper shape for a meal. I laid hold of it by the wings, took the butterfly from it, and turning its own abdomen round so that it entered its jaws at the junction of the third and fourth segments from the end, judge of my astonishment at seeing it munch away, and chew, and swallow mouthful after mouthful, until nothing remained except the two styles, which it dis severed and permitted to drop. This may seem a good deal in the Baron Munchausen style, but I will vouch for it as a fact, and I have no doubt that other parties wishing to test this singular act of self devourment may be gratified.—*John Scott; London Works, Renfrew, September 13, 1852.*

Occurrence of Comatula rosea at Redcar.—Last June I obtained a fine specimen of the "Rosy Feather Star" (*Comatula rosea*), which had been taken in deep water. Professor Forbes, in his 'History of British Starfishes,' says, "I have never heard of its being found on the eastern shores."—*J. S. Rudd; Redcar, September 6, 1852.*

Proceedings of the Entomological Society.

September 6, 1852.—*J. O. WESTWOOD, Esq., President, in the chair.*

The following donations were announced, and thanks ordered to be given to the donors:—'The Zoologist' for September; by the Editor. 'The Literary Gazette' for August; by the Publishers. 'Notizie relative ad Insetti Coleotteri dannosi ed alcuni ospitanti della pianta del Fico; da Carlo Passerini;' by the Author. 'Abhandlungen der Mathemat.-Physikalischen Classe der Koeniglich Bayerischen Akademie der Wissenschaften;' 6 Bände, 2 Abth.: München, 1851. 'Bulletin,' ditto, No. 34—43: by the Academy. 'Annals of the Lyceum of Natural History, New York,' Vol. v., parts 7 and 8, 1852; by the Lyceum. 'Journal of the Royal Agricultural Society of England,' Vol. xiii., part 1; by the Society. 'Smithsonian Contributions to Knowledge,' Vols. iii. and iv., Washington, 1852: 'Fifth Annual Report of the Board of Regents of the Smithsonian Institution,' 1851: 'Report on Recent Improvements in the Chemical Arts,' by Booth and Morfit: 'Directions for Collecting Specimens of Natural History:' 'Abstract of the Seventh Census of the United States:' 'American Zoological, Botanical, and Geological Biography for 1851,' by Charles Girard; all presented by the Smithsonian Institution. A box of insects of several

orders; by Signor Passerini of Florence, Hon. M.E.S. A box of Coleoptera from the Isle of Wight; by George Guyon, Esq. Two pairs of *Boarmia Abietaria*, bred specimens; by the Rev. Joseph Greene. A specimen of *Hydrelia Blomeri*; by Mr. Shield. Four bred specimens of *Ypsipetes Ruberaria*, *Freyer*, a new British species; by Mr. Bond.

Thomas Jones Stevens, Esq., Bogotà, was elected a Corresponding Member, and Thomas Boyd, Esq., 17, Clapton Square, was elected an Ordinary Member of the Society.

Mr. Bond exhibited a box of Coleoptera from the Mundarra River, 400 miles N. of Sydney, among which were several new and interesting species, including a curious cylindrical *Scarites* and two species of *Cerapterus*.

Mr. S. Stevens exhibited some splendid males and females of *Callithea Sapphira*, bred in Brazil by Mr. Bates. The President stated that larvæ and pupæ of this species had been received from Mr. Bates, and would shortly form the subject of a paper for this Society.

Mr. Moore exhibited several curious parasitic insects obtained from the great ant-eater (*Myrmecophaga jubata*), the gland antelope of Africa (*Boselephus Oreas*), and the ostrich, in the Zoological Society's Gardens; and he also showed some immature specimens of a foreign *Polistes*, which had been drawn out of their cells.

Mr. Douglas exhibited a box of Lepidoptera, captured in July near Ripley, among which were two of *Plutella horridella*, taken among apple-trees in a garden at Ockham, and *Gelechia basaltinella*, out of the old thatch of a barn. He likewise exhibited specimens of the rare and curious *Bedellia somnulentella*, bred from larvæ found at Lee, mining the leaves of *Convolvulus arvensis*; also examples of the second brood of the new *Lithocolletis Scabiosella*.

Mr. Weir exhibited some rare Lepidoptera recently taken near Tunbridge Wells—*Gracillaria Ononidis* from *Genista tinctoria*, *Gelechia gerronella*, *Zelleria insignipennella*, *Adela violella*? &c.

Mr. A. F. Sheppard exhibited several fine Lepidoptera, taken near Margate in August,—*Colias Hyale*, *Eudorea lineolea*, *Œcophora deauratella*, &c.

Dr. Dutton exhibited some Noctuæ, caught in the Isle of Wight, the most remarkable being the sexes of the rare *Agrotis lunigera*.

Mr. E. Shepherd exhibited a fine specimen of *Chilo cicatricellus*, a new British species, taken flying near Dover; also two new species of British Tortrices, from the same locality.

Mr. Curtis exhibited a specimen of *Sphinx Antæus*, bred in the Horticultural Society's Gardens, from a pupa imported with plants from Trinidad, and remarked upon the caution with which we should regard as native all the extraordinary insects which appear in this country. He referred especially to such as were captured at light-houses on the coast, of which he adduced some examples, having no doubt that most of the rare or unique species taken in this way, had come across the sea.

Mr. Curtis exhibited a leaf of *Viburnum Lantana*, on which were many scale-like formations, which he supposed were the work of an insect, although he had failed in detecting any inmates.

Mr. Wilkinson exhibited some case-bearing larvæ, probably of *Incurvaria mascullella*. The cases were oval and convex, formed from leaves, and the larvæ were found feeding on the fallen leaves of oak and birch, but they had eaten fresh leaves since their capture.

The President read an extract of a letter addressed by Signor Passerini of Florence, to Mr. Spence, stating that he would be happy to send Coleoptera, Hymenoptera, and Lepidoptera of Tuscany, to any English entomologists who would apply to him, which he invited them to do by post, and that he wished to receive in return examples of English species of those orders.

The President stated that lately at Boulogne he found the edge of the cliff swarming with insects of all orders, although none were visible elsewhere. The wind was blowing seaward, and the insects had been driven over the cliff, and had returned and sheltered at the margin. He also said that at the same time and place he saw a humble bee vibrating its wings as if in flight, but not advancing, and he found that it was impaled upon the sharp point of a reed, pierced at its almost only vulnerable point, between the anterior coxæ and the mesosternum; from its position he thought no bird could have impaled it, but that it had been blown on to the reed by the wind.

Mr. Desvignes said that he had a *Noctua* found transfixed by a thorn, and he was satisfied, from its being in perfect condition, that no bird had ever touched it.

Mr. Curtis and Mr. Bond however were of opinion that the majority of insects found impaled, had been so fixed by birds; and Mr. Waring said he had repeatedly found the nests of shrikes, guided by the birds and insects hung up in their vicinity.

Mr. Curtis said that at Dover he had lately seen *Scæva Pyrastris* in vast abundance, and he was convinced that *S. unicolor* is only a variety thereof: he was unable, however, to find a male of this striking variety, and would be glad to learn if any existed in the London cabinets. He observed that the males of insects seemed to vary far less than the females, and it often struck him as remarkable that whilst pale varieties of the females of *Colias Edusa* were not uncommon, a similar variety of the male should be unknown. When in the South of France, in 1830, he caught a pair of *C. Edusa* flying in copulâ; the male was of the usual orange colour, the female pale yellow, the *C. Helice* of Hübner.

The Secretary read the following notes on the larvæ of a few Micro-Lepidoptera, extracted from the 'Tauschvereins Bericht,' 1848—50, just received.

"*Myeloides epylidella* is a rarity. One of my friends discovered the larvæ in tubular cocoons on blackthorn.

"*Phycidæa binævella*. The larva lives in autumn in the flowers of the ragwort, (*Senecio Jacobææ*); it is, however, difficult to rear.

"*Micropteryx Anderschella* appears with us in spring, when it often swarms in the sunshine on the young shoots of the oak. The larva appears to live as a miner in the leaves of that tree.

"*Depressaria emeritella*. We find the larvæ at the end of July on tansy (*Tanacetum vulgare*), where it lives between united leaves. In seeking for it, one needs to go carefully to work, as on the approach of any danger it hastily descends to the earth.

"*Opotege Laburnella*. The food-plant of the larva is the laburnum, (*Cytisus Laburnum*). Where the larva occurs it is generally plentiful; but it is best to collect the pupæ in autumn.

"*Hypsolophus limosellus*, *Martini*, n. sp. In size and form this new species closely resembles *Hyps. fasciellus*. The anterior wings are narrow, and in form quite the same as in *Hyps. fasciellus*. The ground-colour is yellowish brown, and before the hinder margin it becomes a nut-brown, which colour is produced by an aggregation of darker atoms. On the costa of the anterior wings, from next the base to the end of the curve, is a narrow, sooty, black-brown streak. On the disk, half way across, three dark

brown spots in a straight line may be seen in distinctly marked specimens; the first is near the base, the second in the middle of the wing, and the third before the hinder margin. Under the first and second, but more towards the second, near the inner margin, lies a similar spot, and under the third another, somewhat directed towards the base, and yet it also appears united to the third spot. One or other or all the spots except the third are often wanting. The larva feeds in tubularly united leaves of several low plants. I found it on *Fragaria vesca*, *F. collina*, several species of *Trifolium* and *Scabiosa arvensis*, but hitherto only on an open place in a wood. It changed to a pupa in its abode: the imago appears in July.

"*Depressaria Libanotidella*, *Martini*. Size and form of *D. Heracleana*, which it otherwise much resembles; the size is variable, as specimens occur as small as *D. Pimpinellæ*. The larva lives, in July and August, in the umbels of *Athamanta Libanotis* (*Libanotis montana*), on the mountains and in woods near Jena. When young, and before the flowers expand, it lives between tubularly united leaves; it afterwards draws the flowers together. The perfect insect appears from the end of August to the end of September.

"*Ypsolophus Schmidtiellus*, *V. Heyden*. Size of *Grapholitha Hypericana*. The long, narrow, anterior wings are orange-coloured, darker towards the hinder margin, with a small dark spot in the middle of the wing, and a larger dark spot near the inner margin towards the base. Cilia of the same colour as the wings, preceded by a fine row of dark spots. The larva we find in May on *Origanum vulgare*, where it betrays itself by the curved leaves. On any alarm it hastily retreats to the earth. The imago appears at the end of June."

Ypsolophus Schmidtiellus (first described in the 'Isis,' 1848) can hardly be the *Durdhamellus*, yet *Origanum* would be a likely food for that species.

With regard to *Depressaria Libanotidella*, its food-plant is British, but rare, occurring on the chalk hills of Cambridgeshire. I find it in Sowerby as *Seseli Libanotis*, and in Babington as *Libanotis montana*.

Part 2 Vol. ii. n. s. of the 'Transactions' was on the table.

The meetings of the Society will in future be held at 12, Bedford Row; to which the Society will immediately remove.—*J. W. D.*

Proceedings of the Society of British Entomologists.

September 7, 1852.—Mr. HARDING, President, in the chair.

Mr. Dalman exhibited two varieties of *Callimorpha dominula*, one of which had the under wings of a bright orange-brown, the other had the upper wings nearly white, the usual green being nearly obliterated.

Mr. Harding exhibited a fine box of insects from the coast of Kent, among them were *Setina irrorella*, *Plusia orichalcea*, *Heliothis marginata*, *H. Dipsacea*, *Eremobia ochroleuca*, *Carpocapsa Lepastriana*, *Cynæda dentalis*, *Sericois politana*, *Adela minimellus*, *Crambus lotellus*, and many others, a pair of *Gortyna Petasitis* from Liverpool, and a specimen of *Acherontia Atropos* from Darenth.

The President inquired if any of the members could inform him whether *Macroglossa Stellatarum* was ever infested with the *Ichneumon*? He remarked that at different times he had taken a great number of the larvæ of that insect full fed, the most likely time for it to have the parasite, but in no one instance had he found them miss

turning to the perfect insect. The last season he took two dozen of the larvæ, all of which came out this year perfect, as his experience had led him to expect. He supposed that from some cause they were not infested by a parasite, as were most other Lepidoptera and other insects.

None of the members present could call to mind any instance in which they had observed a parasite in the larva of the above insect.

Mr. Harding had seen specimens of *Colias Edusa* and *C. Hyale*, that were taken near Reigate this season.

Some specimens of *Harpalyce achatinaria* were likewise exhibited by the President, some of them with three wings, some with only two; in all cases the upper wings were perfect, the under wing or wings being entirely wanting, and not a rudiment of them to be seen: in no case had one out of some dozens come out without the upper wings, but a great many without the under.—*J. T. N.*

Curious Variety of the Sedge Warbler, (Salicaria Phragmitis). — About a fortnight ago I was shown a very curious variety of the sedge warbler, killed in Sussex. It was a bird of this year, but full grown, and of a uniform light canary-yellow all over, except that on the top of the head there were a few spots or small streaks of pale olive. —*W. F. W. Bird; 5, King's Road, Bedford Row, August 4, 1852.*

Inquiry respecting the Blackbird supposed to have become white through fright. — Will Mr. Smith allow me to ask, would not the coat of the blackbird mentioned by him (*Zool.* 3577) most probably have assumed its spotted appearance independently of the fright from the "smashing" or "croaking," at the time of moulting, whether that time had succeeded sooner or later? I am led to ask this question, as it is so common an occurrence to see blackbirds, rooks, and jackdaws with patches of white about them, which generally only remain until moulting. I have had a jackdaw from the nest, which then had a greater portion of white than of black on his feathers; but no white was visible at the second moult: and a blackbird, which gradually became whiter until four years old, when he died. In all probability Mr. Smith's will assume his more naturally coloured dress at the next moult. I trust that gentleman will kindly favour us with a note of this change, should it occur, or any other matter touching the songster. I have now in my possession a sparrow and a swallow, both white.—*J. Johnson; Parsonage, Denby, Huddersfield, September, 1852.*

Occurrence of a Toad in a Block of Iron Ore. — On Monday last, September 20, while some workmen were engaged in getting iron ore at a place called Paswick, in the North of this county, they came upon a solid lump of ore, which, being heavier than two men could lift, they set to work to break with their picks, when, to their surprise, in a cavity near the centre of the stone, they found a toad alive. The cavity was much larger than the toad, being nearly six inches in diameter, and was lined with crystals of what I suppose to be carbonate of lime. The stone was about four yards from the surface of the ground; it is now in the possession of Mr. Haywood, of Derby, by whose men it was found: but unfortunately the toad was not preserved after its death, which took place almost immediately on its exposure to the atmosphere. —*John Evans; Darley Abbey, Derby, September 22, 1852.*

Observations on the Natural History of the Water-snail and Fish, kept in a confined and limited portion of Water. By ROBERT WARINGTON, Esq.*

My object in bringing the accompanying observations before the public, is to endeavour to direct, more in detail than I have hitherto been able to do, the attention of naturalists, and those who take a delight and pleasure in the study of Nature's wonderful and glorious works, to a very simple means of easily investigating the habits and œconomy of all those numerous classes of animal and vegetable life that are capable of being brought within the limited precincts of the small water-cases I have elsewhere described.† And when I state that these observations have been made by one most ignorant on the subject of Natural History, and a perfect tyro in this field of research, as the details of this communication will fully demonstrate; when I mention also that they have been made at leisure intervals of very short duration, snatched as an amusement and as opportunities occurred from the weightier matters of professional business;—I hope that it may encourage others to follow in the same most interesting course of investigation, when, aided by a little perseverance, they may ensure for themselves an abundant reward. The matured naturalist I am sure will agree with me in the argument, that if such observations can be made by those unacquainted with the subject, and without trouble or inconvenience, it does offer a means of research which should develop some most interesting and important results, and that the same principle is capable of being extended to a much larger scale; a demonstration of which I believe will be very speedily exhibited. As regards the growth of the plants employed in these miniature ponds, I have already briefly treated in the 'Garden Companion' for January last, and shall therefore confine myself in the present communication to the two other members of the circle; and first—

The Water-snail. This important element in all the cases where the removal of the decaying vegetable matter, or the growth of *Confervæ*, is necessary, to enable the generality of fish to live healthily, as must arise in most stagnant waters and ponds, offers to our consideration some very interesting phænomena. In commencing my experiments in the early part of 1849, I had employed the *Limnea*

* Published in the 'Annals of Natural History,' and obligingly sent to me by the author for insertion in this journal.—*E. N.*

† Zoologist, 2868.

stagnalis for this purpose, but was soon obliged to substitute some less voracious inhabitant for my small domain, for I found that as it grew in size its appetite increased to an enormous extent, and the plants were punished most severely, the leaves of the *Vallisneria spiralis* being bitten quite through; and if the snails were in too large a number, the whole of the vegetation was rapidly removed: other varieties of the *Limnea* were consequently introduced at an early period, namely, *L. auricularia* and *L. glutinosa*, as also *Physa fontinalis*, *Bithinia tentaculata*, *Planorbis corneus*, and *P. carinata*. These last two varieties have been found highly serviceable, as from the cornuted formation of their shell and small mouth, the fish cannot so readily get them out to feed upon. With the *L. auricularia* and *L. glutinosa* this is easily effected in consequence of the large aperture of their shell; and if the fish fails in his endeavours by a sudden attack to shake the snail out, he will attempt to suck it from its retreat, as is the case with the gold-fish; with the minnow (*Leuciscus Phoxinus*), however, it is different, as the smallness of its size renders this manœuvre impossible, unless the snail be very minute; it has recourse therefore to another and quite as efficient a means of obtaining its object, and I have seen these beautiful little fellows seize on their prey and shake it, as a terrier dog would a rat, between a piece of the rock-work and the glass, until they have broken its thin and delicate shell to pieces, and having effected this to their satisfaction, quietly consume their victim.

It will be seen from these facts, that the snails will require to be renewed at intervals, particularly as I have previously shown that the increase of the snail by its eggs, which are deposited in very large quantities, is entirely prevented from the fish consuming them the instant they exhibit signs of locomotion.

These water-snails have the extraordinary power of moving along the surface of the water with great rapidity with their shells downward, the foot being attached as it were to the atmospheric air. The *Planorbis* also can fix itself, without any apparent means of attachment, by its side to the flat surface of the glass, and will remain thus for several days.

In watching the movements of the *Limnææ*, I was for some time under the impression that they had a power of swimming or sustaining themselves in the water, as they would rise from the bottom of the pond, a portion of the rock-work, or a leaf of the plants, and float for a considerable period, nearly out of their shells, without any apparent attachment, and by the contortions and gyrations of their body and

shell, move some little distance, in a horizontal direction, from the point which they had left. On more carefully watching this phenomenon, however, I found they were attached by a thread or web, which was so transparent as to be altogether invisible, and which they could elongate in a similar way to the spider; they also possessed the power of returning upon this thread by gathering it up as it were, and thus drawing themselves back to the point which they had quitted. These facts were clearly proved in the following manner:—A *Limnea stagnalis* had glided its way along a young and short leaf of the *Vallisneria* which terminated below the surface of the water, and having reached the extremity launched itself off from it; after moving about with a sort of swimming or rolling motion in a horizontal direction for some time it lowered itself gradually, and in effecting this the long flexible leaf of the *Vallisneria* was bent with an undulating motion, corresponding exactly with every movement of the snail, clearly showing that it had a firm attachment to the extremity of the leaf. On another occasion a *Limnea glutinosa* gradually rose from the surface of a piece of submersed rock, and when at the distance of about 3 or 4 inches from it stayed its progress, floating about in a circumscribed horizontal direction for some time; at last it rose suddenly and rapidly to the surface, evidently from the rupture of its thread of attachment. The most convincing proof, however, of this fact that I can perhaps adduce, and one that I have often repeated with all the before-mentioned *Limnææ*, is that when the snail has been some inches distant from the supposed point of attachment, a rod or stick has been carefully introduced, and slowly drawn on one side between them in a horizontal direction, and by this means the snail can be made to undulate to and fro, obeying exactly the movement of the rod: this requires to be done very gently, as, if too much force is used, the web is broken, and the snail rises rapidly to the surface.

The next subject of interest which I wish to call attention to is—

The Stickleback, (*Gasterosteus leiurus*). This most beautiful little creature has afforded a subject for much interesting observation for some time past, and I fear that what I have to offer will prove very much a repetition of what has already been published on the subject. As, however, the proceedings and observations of those who dare not rank themselves in the class of naturalists, sometimes from their want of knowledge, cause circumstances to arise which would not otherwise occur, so in the present case my failures through my own ignorance may develope some new points in the æconomy of these small fry. Mr. Edwards, of Shoreditch, whose London garden pond has afforded

much interesting matter to many microscopists, informs me, in a note dated August 27, 1852, that it is about fourteen years since he first noticed the fact of the stickleback building a nest, guarding the spawn and defending the young ones: no publication, however, of these observations seems to have taken place. Since this period, the facts have been published by M. Coste in France in 1847, and quite lately by Mr. Kinahan.*

My observations in the miniature ponds commenced in May, 1851, when, having received from a friend at Mitcham several of these little fish, male and female, the latter being full of spawn, they were introduced to their new abode. A curious scene followed: the male fish immediately took up certain positions, the strongest apparently having the first choice, which they maintained against all intruders, and a species of border warfare was continually maintained across the proscribed boundaries of each, and although at times driven out by a fierce attack from a stronger fish, yet, immediately the battle had ceased, they returned to their previous position, which they defended most vigorously. These battles were at times most desperate, for these puny combatants would fasten tight on each other for several seconds, tumbling over and over, until their strength appeared completely exhausted. If there were more fish present than there were positions for, they fared most grievously, being driven altogether into one corner of the pond, and from which they ventured forth only to be driven back again on all sides, where they were continually exposed to the attacks of their companions.

The day after they had been placed in their new domain, the strongest of the male fish was observed most busily employed gathering small ligneous fibres from different parts of the pond, and carrying them in its mouth to one particular spot, where he appeared to force them into the sand and gravel with his nose. Being perfectly unacquainted at the time with the fact of this little creature building a nest, I watched him more attentively. He had selected a spot behind a piece of rock-work, almost hidden from view at the front of the case and towards the room; but on looking down from the top of the water I could perceive that he had already constructed a small hole as round as a ring, and with a good broad margin to it, formed of the materials he had been so industriously collecting, and on which he appeared to

* Zoologist, 3526. By far the most circumstantial and minute account of the nidification of sticklebacks that I have met with, is from the pen of Mr. R. Q. Couch, and published in the 'Zoologist' for 1844. It was translated into French, and, retranslated into English, appeared in several of our periodicals.—E. N.

have placed numerous particles of sand and small pebbles. This spot he guarded with the utmost jealousy, continually starting from his position and attacking the other fish with most extraordinary fury. The desperate ferocity with which this fish attacked the others, and the continued turmoil the whole pond was kept in, determined me to do a most absurd act, which I instantly afterwards regretted, and my want of knowledge of the subject at the time had prevented my foreseeing, namely, to remove this fish from the pond. I therefore caught it in a small muslin net, and without the slightest trouble, as he attacked the net the instant it was introduced. But what was the consequence? No sooner was he removed from the water, than the other fish darted to the spot he had been protecting, pulled forth a mass of eggs which had been deposited there, and which I had not previously seen, tore it to pieces among them, and devoured it before I had time even to shake my prisoner out of his confinement; however, it taught me a fact in Natural History, and it may perhaps be novel to others. So ended my experience of 1851.

Now I think it will be evident from what I have stated, that these eggs must have been deposited by the female fish, and the nest made around them afterwards; and this I think was also the case with the fish experimented on this year by my friend Mr. Gratton, who had a fine brood of young sticklebacks hatched after fourteen or fifteen days, the nest being formed immediately after the introduction of the fish.

The appearance of the male fish during this spawning period is beautiful beyond description. The eye is of the most splendid green colour, having a perfectly metallic lustre, like the green feathers of some species of humming-bird. The throat and belly are of a bright crimson, the back of an ashy green, and the whole fish appears as though it were somewhat translucent and glowed with an internal incandescence: his ferocity during this period is extraordinary. How so small a creature can bear up so long under such a state of apparent excitement appears marvellous. Later in the year the colours slightly change, the back becomes more of a green tint, the throat and belly of a paler red, and all the glowing appearance subsides. The female fish is of a brown colour on the back, the eye also is brown and the belly white.

I now pass on to the present year, when I had the pleasure of seeing the nest built from the very commencement and through all its stages. The place selected for the nest was the bare flat top of a piece of oolite, where it formed a right angle by resting against the glass partition which separated two of these ponds, in one of which were

kept four minnows and two small eels, and in the second the sticklebacks which form the subject of this observation. In this the male fish commenced gradually to deposit and accumulate his materials. I will endeavour to give in detail the exact description of his proceedings while I had the opportunity of watching him, avoiding as much as possible the repetition of his operations ; for as each loose fibre or small piece of material was brought singly to the chosen spot, the same routine would be gone through over and over again. Now he arrives with a large fibre in his mouth, deposits it, rearranges the whole of the materials, already accumulated, with his mouth, removing one fibre to this place and another to that, and departs on his search for more. Now he returns, carrying a small piece of gravel, which is carefully placed on part of the fibres as it were to keep them down ; he then draws himself slowly over the whole and is off again. Now he brings another fibre, which he dibs in with his snout so as to make it interlace with the others ; then he attempts to interlace in the same way the fibrous rootlet of a *Lemna* which is growing above his head, but which, the instant he thinks he has fastened and loosens his hold of, rises again by its expanded lobe to the surface ; this fibre appears to be well fitted for his purpose, for he repeats his attempts to fix it among his gleanings over and over again. Now he is busy making a circular hole in the middle of the accumulated materials with his snout ; a piece of the fibre is next taken out from the mass, projected from his mouth, watched as it falls very slowly through the water ; then, as it proves too light for his purpose, it is again seized, carried to some distance, and projected away, and he is off to rearrange the remainder, carefully tucking in the ends with his snout ; he then draws himself slowly across the whole and is off again. Now he catches a sight of the female fish, pursues her with great rapidity, and seizes her by the tail and by the lateral spine, but she escapes his grasp and conceals herself behind the rock-work. Again he conveys more material to the nest, and the next journey is again laden with another small piece of gravel ; the whole is then slightly shaken, then compressed, and he is off again ; thus he conveys, without cessation, decayed rootlets, gravel, sand, and whatever material he can find that will answer his purpose. But I must observe that their specific gravity is continually tested : thus, having found what appears a suitable fibre, it is carried a little way, then projected to a short distance from his mouth and watched as it falls ; if it falls rapidly, it is again seized and carried direct to the nest ; if more slowly, it is tried again in the

same manner; and if it then proves too light, it is abandoned altogether, and another selected. If a piece is found better fitted for his structure than what he has already obtained, it is rapidly conveyed to the spot; much alteration in the arrangement of the materials takes place, so as apparently to dispose of the new prize to the best advantage, and it is only after continued and indefatigable perseverance that he succeeds in rearranging them to his wishes. If there should be any strong fibre which he has a difficulty in causing to remain in the position he requires, a small quantity of sand is brought in his mouth and adroitly placed on the top of it to keep it down; if this does not effect the purpose desired so as to please him, the refractory piece is taken out and rejected altogether. At times he hangs or hovers close over the surface of the nest, and throws his whole body into a curious and rapid vibratory motion, by which he causes a rapid current of water to be projected on the materials, as though it were to prove their stability; and when this operation is performed, the lighter particles and light mud are as it were fanned or winnowed out by the generated current, and may be seen floating away: this operation will also explain the reason for testing the gravity of the materials before they are used. Another very curious operation is the action of drawing his body slowly over the surface of the materials which form the nest. I believe that at this time he excretes a glutinous matter, which acts as a species of cement, and tends to keep the materials together, at the same time that the pressure of his body may render them more compact. Or it may be that the whole surface of the nest is by this action charged with the milt, and thus the impregnation of the eggs more perfectly ensured, as precisely the same motion is employed after the eggs are deposited, and from the appearance of the fish it seems to be attended with pleasurable sensations. These two last-described operations are very frequently repeated.

If during this time any other male fish makes his appearance, he is chased with the utmost ferocity, and driven to conceal himself in any cranny which he can find; should, however, another fish be also building, desperate battles ensue whenever they approach each other's position, or chance to meet while collecting their materials.

The whole time occupied in accumulating these materials for the nest was about four hours, during which interval a goodly quantity had been obtained; and a small opening appeared to be carefully constructed near each end of the mass, the use of which will be now explained. All having been apparently arranged for the female fish to

spawn, and the operations of fanning out the light particles, the improving their order, the dibbing in the ends, the loading them with additional sand, and the consolidation of them as described fully effected, and the whole reviewed carefully for several days in succession, as it were awaiting the coming of the female, on her appearance the following curious scene ensued. The female fish came out of her hiding-place, her attention being fixed apparently on the nest, when immediately the male became as it were mad with delight; he darted round her in every direction, then to his accumulated materials, slightly adjusted them, fanned them, and then back again in an instant; this was repeated several times; as she did not advance to the nest, he endeavoured to push her in that direction with his snout; this not succeeding, he took her by the tail and by the side spine, and tried to pull her to the spot, then back to the nest, and having examined the two small openings alluded to, he thrust his nose in at the lower and gradually drew himself under the whole of the materials, making his exit at the opposite one, as though to prove to her that everything was prepared for her spawning. These manœuvres, however, failed in their purpose; she examined the nest several times, but the appearance of the minnows, &c., moving about on the other side of the glass partition against which the nest had been formed, I believe, deterred her from depositing her eggs there, and she afterwards spawned elsewhere. The nest which had cost so much trouble was ultimately abandoned and neglected, and was gradually dispersed by the snails.

There are several other interesting particulars regarding the habits of the several fish, &c., which I have had the opportunity of experimenting with, and which may form the subject of some future memoranda. I would merely remark in conclusion, that I have, after many difficulties and failures, succeeded in keeping sea-water perfectly clear for upwards of six months, and that I have for the last five weeks had several sea-anemonies living in it, which at present appear extremely healthy, and the water has not been disturbed for the last fourteen days. My great difficulty, in the midst of London, has been to obtain materials to work with.

ROBERT WARINGTON.

Apothecaries' Hall, September 10, 1852.

Proceedings of Natural-History Collectors in Foreign Countries.

MR. A. R. WALLACE. * — As some account of the unfortunate accident that took place on my voyage home from South America may not be unacceptable to your readers, I beg to send you the following brief statement of the facts.

On the 2nd of July of the present year, I arrived in Pará from the river Uaupés, an unexplored branch of the upper Rio Negro. I had with me a considerable collection of birds, insects, reptiles and fishes, and a large quantity of miscellaneous articles, consisting of about twenty cases and packages. Nearly half of these had been left by me at Barra a year before to be sent home; but a new government, arriving there shortly after I left, took it into their heads that I was engaged in a contraband trade, and so I found them still there on my way down, in the present year, and had to bring them all with me.

On the 12th of July I embarked in the "Helen," 235 tons, for London, still suffering from fever and ague, which had nearly killed me ten months before on the upper Rio Negro, and from which I had never since been free.

The cargo of the vessel consisted of India-rubber, cocoa, arnatto, balsam of copaiba, and Piassaba. Almost all my cases were stowed in the hold. On the 6th of August, when in lat. 30° 30' N., long. 52° W., at 9, A.M., smoke was discovered issuing from the hatchways, on opening which, and attempting to ascertain the seat of the fire, the smoke became more dense and suffocating, and soon filled the cabin, so as to render it very difficult to get any necessaries out of it. By great exertions the boats were got out, and bread, water, and other necessaries put into them. By noon the flames had burst into the cabin and on deck, and we were driven to take refuge in the boats, which, being much shrunk by exposure to the sun, required all our exertions to keep them from filling with water. The flames spread most rapidly; and by night the masts had fallen, and the deck and cargo was one fierce mass of flame. We staid near the vessel all night: the next morning we left the ship still burning down at the water's edge, and steered for Bermuda, the nearest point of land, but still 700 miles distant from us. For two days we had a fair easterly wind, but this afterwards changed to N. and N.W., and we could make but little way. We suffered much from the heat by day; and being

* Communicated by himself.

constantly wet with the spray, and having no place to lie down comfortably, it may be supposed that we did not sleep very soundly at night. For food we did very well, having plenty of biscuit and salt pork,—raw, of course,—which we found very palatable, with a little water to wash it down. After a week, having seen no vessel, we put ourselves on short allowance of water, and then suffered much from thirst; and as we now were in a part celebrated for squalls and hurricanes, every shift in the wind and change of the sky was most anxiously watched by us. At length, after ten days and nights we heard the joyful cry of “Sail ho!” and by a few hours’ hard rowing got on board the “Jordeson” from Cuba, bound for London, in lat. $32^{\circ} 48' N.$, long. $60^{\circ} 27' W.$, being still about 200 miles from Bermuda.

We now had a very tedious voyage, and soon got to be very short of provisions, the crew being doubled by our arrival: in fact, had not two vessels assisted us with provisions at different times, we should actually have starved; and as it was, for a considerable time we had nothing but biscuit and water. We encountered three very heavy gales, which split and carried away some of the strongest sails in the ship, and made her leak so much that the pumps could with difficulty keep her free. On the 1st of October, however, we were safely landed at Deal, eighty days after we left Pará.

The only things which I saved were my watch, my drawings of fishes, and a portion of my notes and journals. Most of my journals, notes on the habits of animals, and drawings of the transformations of insects, were lost.

My collections were mostly from the country about the sources of the Rio Negro and Orinooko, one of the wildest and least known parts of South America, and their loss is therefore the more to be regretted. I had a fine collection of the river tortoises (*Chelydidae*) consisting of ten species, many of which I believe were new. Also upwards of a hundred species of the little known fishes of the Rio Negro: of these last, however, and of many additional species, I have saved my drawings and descriptions. My private collection of *Lepidoptera* contained illustrations of all the species and varieties I had collected at Santarem, Montalegré, Barra, the Upper Amazons, and the Rio Negro: there must have been at least a hundred new and unique species. I had also a number of curious *Coleoptera*, several species of ants in all their different states, and complete skeletons and skins of an ant-eater and cow-fish, (*Manatus*); the whole of which, together with a small collection of living monkeys, parrots, macaws, and other birds, are irrecoverably lost.

I may also mention that I had taken some trouble to procure and pack an entire leaf of the magnificent Jupaté palm (*Oreodoxia regia*), fifty feet in length, which I had hoped would form a fine object in the botanical room at the British Museum.

ALFRED R. WALLACE.

P.S.—I left Mr. Spruce at S. Gabriel, on the falls of the Rio Negro, hard at work and in good health, on the 29th of April last. On the 15th of June I called at Santarem, which place Mr. Bates had left a week previously on an excursion up the Tapajoz.—A. W.

43, Upper Albany St., Regent's Park,
October 19, 1852.

MR. N. PLANT.*—This gentleman left England in September, 1851, for the purpose of collecting objects of Natural History &c. in the southern part of Brazil. I extract a portion of a letter which I have received from him a few days since, dated "San Leopoldo, July 3rd, 1852."

"I now send off to you my first consignment, which I hope will reach you in safety. It consists of about 1300 insects of all orders, upwards of 100 bird and 8 animal skins, 15 specimens of woods and several of rocks, together with a few rough sketches and notes. In the inclosed letter to yourself I give an account of the country, &c., so will only just remark that I left Rio Grande for Portalegré, where I only remained about fourteen days, seeing that nothing could be done there owing to the barren character of the country. I proceeded on to San Leopoldo, where the greater part of my present collection was formed. I left there for Mundi Novo, on account of the Englishman I was staying with being shot in the arm by some enemy, which compelled him to remove to the city, Portalegré, and me to Mundi Novo, which appears to be the best locality in the province for my pursuits, so I shall remain here two or three years if it pays. The present collection is not a large one, having been made in going from one place to another in search of a good locality to settle in; but I hope it may be of good quality, for travelling expenses are very great here, owing to the absolute necessity for keeping a horse.

"In about three months after receiving this consignment you may expect another, with some plants. I shall see by the sale of the birds whether it will be worth while purchasing powder and shot, for all my powder, except one pound, was taken at the custom-house.

"I see in your letter that Bonpland is said to be dead; but I hear

* Communicated by Mr. S. Stevens.

from a Frenchman just come from San Borji, on the Uruguay, that the 'old gentleman is alive and well.' Mr. Avelin, at Portalegré, knows him well. When last in the city, Bonpland complained about Humboldt's not using him well, making it appear in the account of his travels as if he (Humboldt) had made all the observations, when such was not the case. He was at Portalegré about thirteen months ago. I brought a letter of introduction to him, but was too late. Nearly every one here knows him: I have often been asked if I am going to Signr. Bonpland. The people describe him as being a rather tall man, about eighty years of age; he keeps a "bendá" at San Borji, but follows the profession of Doctor of Medicine as well, and collects plants for the doctors at Monte Video. I think there can be no doubt about his being *the* Bonpland."

M. JULIAN DEBY.*—I believe the readers of the 'Zoologist' are not generally aware that one of its former correspondents, M. Deby, a Belgian gentleman, left Brussels last February for the purpose of exploring the Natural History &c. of some portions of Central America which are imperfectly known; and the results of his investigations will from time to time be forwarded to me for sale. I beg leave to mention that I have recently received a letter from him, dated "St. Thomas de Guatemala, August 9;" and soon after, three boxes of insects, being his first consignment. Judging from the quality of this small parcel, the investigation is likely to be satisfactory. M. Deby has been rather unfortunate; for after having explored the rivers Montagua, Rio Vicente, Rio San Marcos, Rio Ceja, Rio Cacas, &c., and having camped for several weeks in the forests on the mountains of Sangille, he had collected fifteen boxes of insects (some most beautiful) and a pretty collection of humming-bird skins, and returned to St. Thomas to pack and send them off; when his travelling companion, M. Catelle, fell seriously ill, and he had to take care of him: when suddenly he was himself seized with the malignant fever of the country, and had his whole body covered with tumours. He was for six weeks completely laid up, and nearly all the time unconscious; when he came to himself, his first thought was for his collections: alas! his Indian servant had forgotten to fill up with tar the plates laid under the bench which supported his boxes, and the ants (a small red species) had devoured every specimen in his collection. He states that he is still weak, and his companion ill, the climate being very bad for

* Communicated by Mr. S. Stevens.

Europeans. Travelling in Central America is no easy matter; the roads are shocking, and infested by bands of robbers and assassins, called in the country "lucios." He states he is going shortly to the Altos (Cordilleras) of Guatemala, and hopes the air there will soon restore his health; and he expects to collect many fine things. The small collection now sent is from the neighbourhood of St. Thomas. M. Deby states that his energy is not abated, either by privations or dangers; and that by next post I may expect a long letter, detailing his excursions, notes on Natural History, &c.

MR. F. STRANGE.* — This well-known Australian naturalist, who has been in England for some months, leaves in a few days for his old haunts, to further investigate the Natural History of that great continent. Judging from what he has already done, and from his great zeal and activity, we may fully expect to receive many more novelties from him, which I will duly report, as they arrive, in the pages of the 'Zoologist.'

MR. R. W. PLANT.*—This gentleman (who is not related to Mr. N. Plant before mentioned), a botanist of some repute, is now engaged in investigating the Natural History and Botany of the Zoolu country, South Africa. Judging from the four consignments which I have received from him, consisting of Orchids, bulbs, seeds, shells and insects, which contained many novelties, and from the deep interest and real love that he takes in the subject, we may expect that he will make many very valuable and interesting discoveries.

MR. C. ZEYHER.* — This well known Cape botanist and naturalist is still engaged in forming collections, but from the continuance of the Caffre war, he has not been able of late to do much. I have, however, within the last twelve months, received from him several cases of bulbs and woods, and have three sets of his botanical collections on sale.

MR. H. W. BATES.—We have before us three letters from this most ardent and skilful collector, all addressed to Mr. S. Stevens, written at Santarem, and dated respectively, April 12, May 17, and June 4. Mr. Bates appears to be in excellent health, and to be collecting as laboriously and as successfully as ever. We have Mr. Stevens' kind permission to make extracts, but are unable to spare room for them in the present number.

* Communicated by Mr. S. Stevens.

Remarks on a Critique of the 'Falconry of the Indus.'

By RICHARD F. BURTON, Esq., Indian Army.

E. I. U. Service Club,

14, St. James's Square.

SIR,

I have the honour to forward the few following remarks upon a critique which lately appeared in your valuable pages, (Zool. 3569); trusting to your kindness and impartiality for their insertion.

You "entertain grave doubts" concerning the story of the Ukab or vulture attacking the hawk. I have none. Although personally I never witnessed one of these encounters, still, the hundred stories which I have heard from falconers in every part of Scinde, force me to believe that they sometimes take place. I might as well doubt that pigs kill children. One could scarcely expect to witness the scene, on account of the surprising care with which the falconer guards his charge. But I have frequently seen "preludes to dispute" between the Ukab and hawk, over a quarry, and Sir Alexander Burnes, if memory serves me aright, remarks the enmity with which they regard each other.

Moreover, I hold the Ukab to be a true vulture. It has the eyes even with the head, a bare neck, a habit of walking with half-extended wings, and the real vulturine fondness for carrion. Whether it does or does not constitute a distinct genus, I am unable, at present, to decide. But about this, as well as the other birds, I will adopt your suggestion, merely premising that the labour will most likely be in vain. The "unwise custom" of giving to unknown birds names "familiar as household words" to English ears, is rather to be charged upon the Anglo-Indian race, than upon an humble individual of that species. We all translate Bulbul by *nightingale*, call a kind of crow a *Malabar pheasant*, and "prate" of the Cheel as a *kite*.

Which leads me to another consideration. At page 3569 of your excellent journal, I read: —

"When a man is so delighted with having made out that *goolab*, in some of the thousand and one dialects in which India rejoices, is the equivalent of yellow in English, that he must needs prate of a hawk's having a *goolab eye*, we find his affectation all but insufferable, and devoutly wish that he were confined to the use of plain English for the remaining term of his natural life."

I exclaim, Alas! that the British critic will not waste over his critique as many minutes as the author criticized spends days in compo-

sition. Kindly glance your eye, Sir, once more over the passage, at page 16, and you will find that your lash has been laid upon a literal quotation from Sir A. Burnes's 'Personal Narrative of a Journey to Cabool.' My shoulders are broad enough to bear my own sins, but I beg leave to decline carrying additional weight.

Possibly you may, by way of being candid, contend that, wrong in one point, you are right upon the whole, for the *brochure* does abound in native and technical words. True!—and the *rationale* of the matter is this. I write for the student, and the student rightly prefers books which, like Herklot's 'Qanoon-i-Islam,' and Lane's 'Manners and Customs of the Modern Egyptians,' give the Oriental name for every object of which they treat. I flatter myself that even a tyro, after perusing my little work, could mix with English or Scindian falconers without displaying offensive ignorance of the noble sport. Moreover, for many years I have been employed in studying the Scindian literature and language, which, from your allusion to the learned Burritt, I suppose you rank with the Ojibbeway or Digger dialects. Allow me then to refer you to a work lately published by the Court of Directors of the Hon. East India Company, and entitled, 'Sindh, or the Races that inhabit the Valley of the Indus.' You will there find that it is the language of a country as large as England; that it is the fourth (not the thousand and first) spoken in Western India; and that it is attracting the attention of many linguists.

To conclude, Sir, pray do not determine that I have any evil intention of assaulting you with my tooruratee—a foot-note would have informed you that it is a misprint in Burnes for toormatee—but kindly remember, in your future critiques upon "Indianee" works, a sentiment which you will find expressed in p. 91 of my Postscript.

And believe me,

Your obedient Servant,

RICHARD F. BURTON,

Indian Army.

To the Editor of the 'Zoologist.'

[We wish our correspondent, in addition to his able and playful repartee, had favoured the readers of the 'Zoologist' with the required information as to the real names of the birds used in Indian falconry. The subjoined note from Mr. Gurney will, however, supply this key to Mr. Burton's most amusing volume. One word more: let our subscribers read the book, our critique, and the author's reply, and we will abide by their verdict.—*Ed. Zool.*]

Note on Indian Falconry.—With reference to the notice of Lieut. Burton's work on the 'Falconry of the Valley of the Indus,' in your last number (Zool. 3569), I find the following falcons and hawks enumerated as being trained in India for this purpose, in Mr. Jerdon's excellent work entitled 'Illustrations of Indian Ornithology,' published at Madras in 1847; which information may probably elucidate some of the points in question. The species thus mentioned by Mr. Jerdon are:—

Falco Peregrinus,	....	called in India,	Bhyree.
„ Peregrinator,	....	....	Shaheen.
„ Juggur,	....	....	Juggur (male), Lug- gur (female).
Hypotriorchis Chicquera,	....	....	Turoomtee.
Astur Palumbarius,	....	....	Baz.
„ trivirgatus vel Indicus,	....	....	Gorbesra.
Accipiter Besra,	....	....	Besra.
„ Fringillarius, vel			
Badius,	....	....	Basha.
„ Dussumierii (?)	....	....	Shikra.
„ virgatus (?)	....	....	Khandesra.

I may add that Mr. Jerdon has the following paragraph in his account of *Aquila Bonellii*:—"Most native falconers have stories to relate of its having carried off a favourite hawk;"—a statement bearing strong resemblance to that made to Lieut. Burton respecting the vulture referred to in his work.—*J. H. Gurney; Easton, September 24, 1852.*

Note on the Habits of the Fern Owl or Goat-sucker, (Caprimulgus Europæus). By Mr. W. H. THOMAS, late Bird-keeper at the Surrey Zoological Gardens, and Zoological Society of London.

ONE sultry day, about the beginning of July, 1832, I was roaming through Dulwich Wood, which, at that time, was thickly clothed with underwood, with here and there dense clumps of tall furze, and sloe and hawthorn bushes. I had lost all trace of a pathway, and had been wading through the close shrubs for some time, when I suddenly came to an open part of the wood, of small space, and almost directly from under my feet up flew a bird in my face. So sudden and noiseless was its flight that I was at first startled; it flew close round me in a light swallow-like manner, displaying ridiculous gestures, opening

its wide toad-like mouth, and stretching out its feet. The bird was evidently in a state of great anxiety, as it ever and anon disappeared amongst the dense foliage. It was no doubt using all this artifice to draw me from the place. As I stood still on the spot, watching the motions of the bird with no small degree of admiration, I did not at first observe that I was standing upon the two young ones of the fern-owl or night-jar, for that was the bird which I had disturbed. On looking more closely at them, I found that I had crushed flat one of the young birds, the other seemed to be unhurt. At the time when I so heedlessly trod on the young fern-owls, I thought I heard a faint shriek, which was probably the dying scream of the crushed bird, and, if heard by the parent, would no doubt increase its anxiety for the safety of its young. So very similar, too, was the dark, mottled, downy appearance of the young night-jars to the variegated mossy surface on which they were placed, that they might have escaped my notice had I not flushed the old bird. There was not the least vestige of a nest, but only a shallow depression in the moss, from the bird's close sitting.

On leaving the spot to ascertain where the old bird was, as she had disappeared, I observed her at a short distance perched in an oak tree, and found that her wheeling flights around the spot, combined with her conspicuous owl-like appearance, had attracted a number of the small birds which frequent the woods in summer, so that I was completely surrounded by curious, restless, weeting,* little willow-wrens, and other warblers, which seemed to be flitting at and mobbing the fern-owl, while perched in the tree, in the same way as they will often serve the common owl, when seen abroad in the day-time; and no doubt they looked upon me also as an unwelcome intruder on their leafy dwellings.

At length the fern-owl flew from the tree into the thick underwood. I watched the spot for some time, retiring among the shrubs in sight of the place where I had left the remaining young bird, but the old one did not return to her young charge, and I saw her no more.

In about a week after this I returned to the place; but although I had previously marked my path out of the wood by breaking conspicuous and outer branches, and notching the trees, it was some time before I could find the spot, — not an easy matter, indeed, in thick

* "Weeting," alluding to the incessant weeting or wailing note of the yellow willow-warbler (*Sylvia Trochilus*), when this bird has young ones, and any one is in the vicinity of its nest.

woods, away from any path or ride; however, there was the young bird, precisely in the spot where I had left it. It had grown as big again as when I first saw it; and on moving it to a short distance, it walked back, with rather a waddling motion, to the spot on which it was first hatched: it was not old enough to be in any way shy at my approach. On examining the place, I found numerous parts of the wing-cases of beetles, remains of moths, &c., with which the young one had been fed.*

As I did not think the bird sufficiently fledged to be taken now, I determined to leave it another week, and risk ever seeing it again. With the hope of again seeing the parent bird, I lay down, concealed in the wood as much as possible, but within sight of the young one, for the express purpose of seeing if the parents would visit it; but they never came while I was present, and although I beat about the spot in all directions, I saw no appearance of them.

Seven days had elapsed when again I returned to my young charge. I had no sooner placed myself within sight, than up it flew like a shot, wheeled round for a short distance, and made an awkward attempt to perch upon some shrubs. I was pretty quickly after it, and secured it just as it was about to renew its flight. It had grown surprisingly in the week, and was well feathered; but I was much mortified to find that its feet had grown in contrary directions, which accounted for its awkward and no doubt first attempt to perch. When I trod on and killed its fellow nestling, I had most likely injured the foot of the living bird, which injury had caused the deformity. This young fern-owl I took home, and fed it with chopped hard-boiled egg, scraped raw beef, and scalded bread, mixed together. I left the bird in the care of another person while I was absent, but it died in a few days, from neglect, as I supposed, for the fern-owl is not a difficult bird to rear. I never saw the old birds from the time of my first discovery of the young ones, and then only the female.

Song of the Fern-owl. — The first time that I heard the song of the fern-owl in perfection, was one fine, warm, summer's night. In the afternoon of the 25th of June, 1828, I had at my ease walked away

* Query.—Do the old fern-owls feed their young in the day-time, or only in the night and early morning? The young birds of this species that I have kept in confinement have done very well without food for above six hours in the day, for I used to feed them more frequently in the evening, and early morning, when they become much more animated. It is probable that the old birds might take any beetle or other insects in the close vicinity of their young ones, for I never observed them on the wing in search of food in the day-time.

from the incessant noise and din of the great metropolis, to enjoy myself in scenes far more congenial to my mind. Avoiding as much as possible the dusty roads, I struck across the Lewisham road at the parish boundary-post, over the hilly fields, to Lady Well and Lewisham Church; again across the Tonbridge road, up the long lane by Hither Green, then into the great road again near Southend; continuing on the road until I crossed some fields to the left hand, I arrived at a beautiful meadow, bounded on two sides by a thick tangled wood, in a rather wild part of the country between Bromley and Chiselhurst, Kent. The grass had been cut, and the hay made into large heaps or cocks, ready for carrying. By the time I had reached this place, the sun had gone down in all its glorious splendour. Not caring about returning to town the same night, and there being no place nearer than Bromley where I could lodge, and besides, being unwilling to enter a public-house, I determined on passing the night in the field where I was. Night came on apace, and I had seen no human face since I entered the meadow; so I set to work and made two of the hay-cocks into one large heap, at a short distance from the wood-side; and then, mole-like, burrowed into the middle of the hay, just leaving my head outside for a little fresh air, and free for any observations I might have occasion to make, as well as to watch the course of the moon, which had risen in unclouded beauty. Here then was a soft, warm, and deliciously sweet-scented bed, made in quick time; and I had not rested long before I found it necessary to throw off a layer or two of my fragrant covering, for I began to get too hot: at length sleep overcame me, but how long I had remained in that state when I awoke, I cannot say;—I had a confused idea of elves, sprites, fairies, and such-like imaginary beings haunting me in my sleep.

I had not long been again settled on my grassy couch, reflecting upon my wild fantastic dream, with all its attendant revelry, when my attention was drawn to the singular, wild, ringing strain of the fern-owl; it resembled at times the whirring rapid rotation of a wheel, now swelling, now diminishing, the sounds intermixed with curring and croaking notes, some of the sounds having a ventriloquial effect: there was now and then a sharp, unearthly kind of shriek; presently there were the same sounds issuing from other quarters of the wood, until the whole place was ringing with the wild nocturnal notes. As day-break advanced, I could see the fern-owls (there were at least from four to six birds) hawking for moths, chasing and pursuing each other, and sweeping along with surprising sudden turns and tumblings. As I sat motionless, with my head just above the surface of the hay-cock,

I had a good view of their proceedings; the birds were continually snapping at the numerous small moths which were hovering over the heaps of hay. The birds are not very shy when pursuing their prey; for they would glide along close by me; amidst the gloom one could see them looming in certain positions, as a ship at sea is sometimes to be seen in the night-time. At times the fern-owls would suddenly appear close to me as if by magic, and then shoot off, like meteors passing through the air.

The spectral and owl-like appearance, the noiseless wheeling flight of the birds as they darted by, would almost persuade one that he was on enchanted ground, spell-bound, whilst witnessing the grotesque gambols of this singular bird; there only wanted Puck, with his elfin crew, attendant fairies, &c., in connexion with the aerial flights of the fern-owl, to have made it, as it was to me, a tolerably complete 'Midsummer Night's Dream,' especially as the fever of my night-haunted imagination had not as yet vanished. As it was, I was delighted with this nocturnal and beautiful scene from Nature, and I wished at the time that some of our museum-naturalists had been with me, to have shared the pleasure that I felt.

Daylight now rapidly advanced, and the fern-owls had vanished into their woody domain, and all was still. After a good wash at a little brawling rivulet, I felt myself refreshed, and my rustic toilet completed, I dashed into the thick tangled wood in search of further adventures.

At the latter end of June, 1830, I started at 12 o'clock at night with a friend from Bermondsey, Surrey, for a walk to Bexley, over Dartford Heath, to Wilmington and Hawley, Kent. We arrived at the Bull Inn, on the top of Shooter's Hill, between 2 and 3 o'clock in the morning. Here the fern-owls were very busy, hawking for food about an elm tree close to the inn; and we sat down on the bench outside the house for half an hour to refresh ourselves, and at the same time to admire the clever quick movements of the birds. There were several of them, and they kept flying about the outskirts of the wood opposite the inn; but the elm tree seemed to be a favourite resort, there being no doubt plenty of moths and beetles about it. The place was all alive with fern-owls, and their continued singing, with occasional sharp squeaks, made the locality ring again, particularly about the keeper's house. The birds did not seem in the least alarmed or shy at our presence, but flew so close to us that I nearly knocked one down with my stick.

Food and Habits of the Young of the Fern-owl in confinement.

— Two young fern-owls, which I reared from the naked state, were taken about the 9th of July, 1837, and were fed upon the food before mentioned, made into moist pills. When they were very young, I used to cram them with the meat-pills every two hours, giving to each of them four, five, or six pills, according to the size: these were given in the day-time. As the birds grew larger and stronger, I gradually increased the size of the pills, so that by the time they could fly, they would swallow one as large as a marble. At this time I very seldom fed them during the day, but more frequently in the morning and evening. I could never get the birds to pick up the food themselves, nor did I pay any very great attention to them in this respect, having but little time to look after them. They were pleasing quiet birds: at first they made a feeble hissing or wheezing note, but as they grew up they discontinued this noise, and would utter a croaking kind of note. When I placed them on the back of a chair or on the edge of a door, they perched in the same manner as most birds do, — across. When set upon the ground they walked with a waddling gait, and one could hardly see their little short legs and feet whilst walking.

When kept in a light situation the young birds would remain quiet, winking and blinking; but placed in a darkish spot, they would open their large full eyes, and look about them. At sunset, they began to be on the move, and became much more sprightly and animated; soon after sunset they would suddenly fly round the room for a short time, and then alight upon the top of a cupboard-door which was kept open as a perch for them. I never observed the birds miss their footing, or blunder about, or strike their heads against the ceiling of the room, as many young birds do in their first attempts to fly. They wanted no cage in the daytime, as they would remain pretty quiet wherever they were placed; but at night I kept them in a basket, in case they should dash through the windows after I had retired to rest.

I kept these young fern-owls for eight weeks, and was highly amused with them; I then handed them over to the Zoological Society of London, and the head keeper told me they lived until after Christmas of the same year, but that he could never get them to feed themselves, and that whenever he entered the place where they were kept, they would immediately open their capacious mouths, showing that they were quite ready for their daily meals.

Incubation of the Fern-owl.—Although I have taken many young fern-owls, I never found more than two at one hatching, and those always upon the bare ground, generally in the open parts of woods, or

large heathy tracts where there were patches of fern, furze, and dwarf shrubs. I never observed the slightest appearance of a nest, nor have I ever found more than two eggs together. The eggs are marked and blotched with grayish and greenish ash-colour; they differ in the shades being lighter or darker. The female, when sitting upon her eggs or young, squats so close and flat, besides remaining motionless, and her colours harmonizing with the surrounding surface of the ground, that she is not readily seen, except one happens to catch sight of her large, lustrous, dark eye; indeed, when she has young, she will almost let you tread on her before she attempts to rise.

I have found the fern-owl common in Kent, Sussex, and Hampshire; and once found a single egg of the bird, in the month of June, in an open part of Epping Forest.

W. H. THOMAS.

15, Hanover Street, Walworth,
September 27, 1852.

Supplemental Note on the Black-bellied Darter, (Plotus Anhinga).

By the Rev. ALFRED CHARLES SMITH, M.A.

I MAKE no apology for writing a few additional remarks on the black-bellied darter, as the principal part of my present communication will be composed of an extract from a letter I have lately received from Mr. Waterton, and which that gentleman has kindly allowed me to make use of in my account of the bird killed near Poole (Zool. 3601), but which did not reach me until after I had sent that account to the 'Zoologist'

Speaking of the *Plotus Anhinga*, Mr. Waterton thus writes:—

"By mere chance, I may say, I have acquired some knowledge of the habits appertaining to the bird after which you inquire. I never found it on the sea-shore of Guiana; but when I was far away in the interior, searching after genuine Wourali poison, it was plentiful on the wooded banks of the river Essequibo. You have described the darter very accurately in your letter to me: but probably there is some difference in the plumage of that which frequents the United States, and of that which is found in Guiana. Should the darter of the United States inhabit the sea-coast, I see no reason at all why it should not occasionally take flight to Europe, as it would have a sufficient supply of its natural food all the way over. But I cannot, by any means,

give into the notion, that your bird has escaped from captivity, as I have never heard of an instance that it has been bred up tame; and I am quite sure that the habits of a wild one, when caught, would not allow it to endure a sea voyage. Those in the Essequibo were not remarkably shy; but when our canoe approached the tree on which they were sitting, they would drop down into the water, head foremost, with the velocity of a falling stone, and with their wings motionless by their sides. At times they would cross the river, and then I had an opportunity of procuring one; but being on my journey into the interior, and not finding it convenient to preserve specimens, I fired at no more. The one I killed, was a fine old male of a bottle-green colour, and with less white on it than that which you have described: the two covert feathers of its tail were crimped very deeply in the most regular manner; one on each side of these was slightly crimped, but only on the outer side of the shaft. I have a picture in the house, of three fantastical beggars: it is Spanish, and is probably more than two hundred years old: each beggar has some scapular feathers of the African Anhinga in his cap. I think that I have now given you all I know about the darter."

So far Mr. Waterton, who, as an eye-witness of the habits of this bird in its own native haunts, and at the same time a very first-rate ornithologist, is the most valuable authority we can desire.

I subjoin a few more particulars of the character and habits of this bird, which I have extracted from the authorities mentioned in my former account, with the addition of an extract here and there from Wilson's 'American Ornithology.' And first, the *generic* character of *Plotus*, which I intended to have given before:—"Beak long, straight, slender and pointed, its tip finely toothed; edges of the upper mandible dilated at the base, but otherwise compressed and inclined inwards; lower mandible shorter than the upper; nostrils linear and concealed in a slight groove: wings long, the first alar quill shorter than the three following, and the third quill the longest: tail very long, its quills rough and elastic: legs short, strong, and set far back; tarsus shorter than the middle and outer toe, which are of equal length, all the toes inclosed in a single web."

The darters are found on the banks of retired, still, and shady rivers, in low and swampy districts: they feed on fish, which they catch by darting at them with their sharp bill and long vibratory neck: sometimes they stand motionless for hours on the limb of a tree or a stump projecting over the water, and, like the heron, watch patiently for fish. Wilson says, "they crawl from the water upon the limbs,

and fix themselves in an upright position, which they maintain in the utmost silence: if there be foliage or long moss, they secrete themselves in it in such a manner that they cannot be perceived unless one be close to them. When approached, they drop into the water with such surprising skill, that one is astonished how so large a body can plunge with so little noise, the agitation of the water being apparently not greater than that occasioned by the gliding of an eel."

When in the water they are very shy and difficult to get near, and in swimming the head is the only part visible: they will dive, too, with the greatest alacrity, and make their appearance at a considerable distance; the long elastic tail-quills serve as a rudder when the bird is in the water procuring fish: if the fish be small, it is swallowed at once; but if large, the bird carries it either to a rock or to the trunk of a tree, and holding it fast with one of its feet, tears it to pieces with its beak.

With regard to its nidification, some say that it builds its nest either upon trees or among the rocks in the neighbourhood of the water; but Nuttall says "they usually build in low trees stretching over the water in their favourite swamps, lagoons or rivers, and sometimes select the retirement of islands. The nest is made of sticks and coarse reeds, and the eggs, probably eight or more, are said to be of a sky-blue colour. They are so attached to particular localities as to breed for a series of years in the same tree. The young, as well as the old, if materially disturbed, drop from the nest into the stream over which they are usually suspended, in perfect silence, like lumps of lead, often diving entirely beyond the view before they again emerge."

According to Bartram, "they are sometimes seen in the heat of the day in great numbers, sailing very high in the air over lakes and rivers." If this be the case, it may account for the occurrence of our bird in England; but I must add that this narrative of Bartram's militates strongly against Nuttall's account, who says "the darters, though eminently aquatic, keep in fresh water at a distance from the sea: they never walk, *nor remain long on the wing.*"

The above extracts sufficiently show the character and habits of this remarkable bird, and may be of interest to those who have not the original works at hand to consult. After extracting so largely from Mr. Waterton, Wilson, Nuttall, Temminck, &c, it would be presumptuous in me to add anything further; but having in my former paper called attention to the accuracy of the drawing of the bird, perhaps I may be permitted to remark of the engraving, that though upon the whole I consider it very faithful and satisfactory, there are one or two

points in it which require comment, to prevent any misconception of those points. These are, first, the *beak*, the boundary-line between which and the chin is not sufficiently clear, and the small pouch with which the lower mandible is furnished being almost imperceptible : and, secondly, the *feet*, wherein all four toes are united together by membranes, the hind toe articulated on the inner surface of the tarsus. It is necessary to remark upon this, to avoid giving a decidedly erroneous impression of the bird, it being a very distinctive and important feature, peculiar, not only to the genus *Plotus*, but to the whole family of *Pelecanidæ* to which *Plotus* belongs. With these exceptions, the engraving is a very faithful representation of the bird killed in Dorsetshire.

ALFRED CHARLES SMITH.

Old Park, Devizes,
October 16, 1852.

Curious Localities for the Nest of the Spotted Flycatcher, (Muscicapa grisola). — In the summer of 1850, a pair of spotted flycatchers built their nest between the upright and cross pieces of quartering that formed part of the frame-work of the colossal picture of "Napoleon crossing the Alps," at the Royal Surrey Zoological Gardens. The nest was wedged in between the wood-work and the canvas of the picture, the cross piece of wood forming a foundation or basis for the nest. This was situated at fifty feet from the ground, and was a very shallow fabric, composed of small roots, spiders' web, and by far the greater portion of it of pieces of string, with a little tow and fine hay for a lining, being chiefly materials which the birds had picked up from the sweepings of the garden. The nest was just above the highest platform that was built behind the picture, the frame-work of which formed the most lofty peak of the mountain scenery, and amidst the din, roar, and blaze of numerous Congreve rockets, sky-rockets and maroons, with frequent thick showers of falling fire, the sudden glare of red and other coloured lights, with their suffocating smoke, and the continual passing and repassing of several men, almost touching the nest. Yet such was the maternal affection of the female, that she was not to be scared from her nest and eggs by any of these untoward circumstances, which occurred for four or five nights in each week ; but sat on, Phoenix-like, an unconcerned and unmoved spectator of the pyrotechnic display, safely hatching and rearing four young flycatchers. On the 27th of June I went to the top of the platform, to see how the young birds were getting on : three of them had already left the nest, and the remaining bird, when I approached, darted off, but for about a minute hung suspended by the foot, having got entangled in some of the string or tow of which the nest was composed. On my attempting to extricate it, the bird gave a sudden jerk, disentangled its foot, and partly flew partly tumbled into the thick shrubs below, at the back of the elephant-house, and I saw no more of any of the young brood. I took the nest, which contained one addled egg, and have it by me at present. In rather less than four weeks the same pair of birds had built a second nest, and hatched four more young ones, which were fledged and nearly ready to

fly when I saw them. This nest was built on the same frame-work, but more out of the way of the artists, and not more than ten feet from the ground: it was composed of a great quantity of old spiders' web, with the egg-bags of the garden spider, intermixed with fine roots, bits of chip and string, and lined with fine hay. At an opposite part of the garden there was another nest of spotted flycatchers, built between a large lower branch and the main stem of a poplar tree, and containing five young birds ready to fly at about the same time as those in the first nest. This pair of birds likewise had a second nest of four young ones; this was built against the stem of a tree, and partly supported by a more slender stem that grew close to it, in the shrubbery, and near the situation of that in the poplar tree. In woody situations I have taken several handsome nests of this bird out of old faggot-stacks: they were composed of fine roots, hay, &c., and very prettily studded with different mosses and gray lichens. The eggs are four or five in number, with a bluish ground-colour, speckled all over with reddish and yellowish brown. The birds are common in most large gardens, and are familiar, and not easily made to forsake the spot they are used to. — *W. H. Thomas; 15, Hanover St., Waltham, October 4, 1852.*

The Poison of the Toad. — Popular tradition has from time immemorial attached a poisonous influence to the toad, but enlightened opinion presumed that the idea was an ignorant prejudice. All doubts, however, as to the poisonous nature of the contents of the skin-pustules of the toad and salamander lizard are set at rest by the recent experiments of two French philosophers, MM. Gratiolet and S. Cloez, who by inoculating various animals with the cutaneous poison of toads and salamanders, have demonstrated that the substances in question are endowed with well marked and exceedingly dangerous qualities. The first experiment of these gentlemen was prosecuted on a little African tortoise, which was inoculated with some of the toad-poison in one of its hinder feet; paralysis of the limb supervened, and still existed at the expiration of eight months, thus demonstrating the possibility of local poisoning by the agent. In order to determine whether the poisonous material spoiled by keeping, the two gentlemen procured about 29 grains of the poison, on the 25th of April, 1851, and having placed it aside until the 16th of March, 1852, they inoculated a goldfinch with a little of this material. The bird almost immediately died. Subsequently the investigators succeeded in eliminating the poisonous principle from the inert matters with which it is associated in the skin-pustules, and they found that when thus purified its effects are greatly more intense than before. Like most of the known very strong organic poisons, the active principle of toad-venom is alkaline in its character, almost insoluble in water, slightly soluble in ether, and very soluble in alcohol. MM. Gratiolet and S. Cloez are at this time occupied in collecting a large amount of toad-venom, and will shortly make known the result of their further investigations, which are calculated, in the opinion of the investigators, to throw considerable light upon the nature and action of the poisons of hydrophobia, of serpents, of contagious diseases, and animal poisons generally. — *Ed. Zool.*

Note on the Egyptian Cobra. — When several of these deadly venomous snakes are confined together in one cage or apartment, they must be closely watched, as they are very likely to devour each other. Half a dozen live sparrows, with their flight-feathers pulled out, to keep them at the bottom of the cage, were put into the same apartment

with four Cobras. Very soon one of the snakes seized a sparrow, and while in the act of swallowing the bird, a second snake, instead of attacking the sparrows that were hopping about the cage in all directions, seized the first by the head, and compelled him to disgorge the bird. Notwithstanding the struggles and twistings of the first snake to extricate himself from the jaws of the second, he was held fast by his antagonist, who speedily began to devour him. The first snake, while in the other's jaws, seemed by his wriggling and twisting, rather to be assisting himself down the throat of the second than endeavouring to get free. He was rapidly disappearing, but was rescued as soon as observed: about a quarter of an hour or twenty minutes would have been quite sufficient for the second to have accomplished the feat of swallowing his companion in captivity. Two keepers laid hold of the snakes, and gradually drew the one out of the jaws of the other, which also assisted to disgorge his prey. When liberated, the snake that had been swallowed appeared a little mystified and astonished at the process he had undergone, but soon recovered his usual vigour, and was ready and willing in his turn to make a meal off either of his companions. When the sparrows are first put into the cage, the Cobras are generally a good deal excited and very fierce, striking at their own species rather than taking the sparrows: the snakes that are struck at avoiding the bite by continually bobbing their heads out of each other's way, and evidently being afraid of each other. Sometimes two snakes will at the same time seize upon a third, the one taking hold of his head, and the other of the middle of his body, both endeavouring to swallow the same snake, and obstinately retaining their hold; the twistings and struggles of the three snakes closely knotted together being a highly curious spectacle. The sparrows seldom show any signs of fear of the Cobras, unless they are struck at and missed, when they become more shy of their deadly enemies. It appears singular that the Cobras should exhibit more inclination to devour one of their own species, than to make a meal of the sparrows: it is probable that in a wild state, when they have seized a bird, a frog, or any other living creature, they get out of each other's way to devour it, so that then there is but little chance of their devouring one of their own species. In confinement, this disposition to swallow each other was seldom manifested, except when the Cobras were roused by living food being put into their cage, and then, as soon as one of them had seized a bird, the others generally attacked the captor; and although there was not much difference in the size of the snakes, it was most frequently the larger ones that attacked the smaller. The Cobra will in most cases swallow a bird head foremost, the wings being in the way of his taking it in any other manner; but a frog they will swallow in any position: this is done by repeatedly gulping down the prey, and not by drawing it in by the slow process habitual to the Boa constrictor, neither does the Cobra enfold the object in its embrace. They often go without food for several weeks, and sometimes for months together; but it is better for them to eat once in a week or a fortnight. While in a healthy state the Cobras generally lie together in a heap, with their heads mostly hidden under their folds, and out of each other's way: sometimes they will recline on the branches of the trees that are placed in the cages for that purpose. When they are in a declining state, and near their death, they will mostly lie apart from the others. They shed or slough their skins every few weeks when healthy: as the skin gets old the snakes look darker, and are less active, they likewise see but imperfectly, for the skin completely covers the eyes. When they are shedding their skin they are continually on the move, rubbing it off between the folds of their body, or against the branches of a tree. It greatly assists them at times to immerse them in warm water, as it eases the skin off sooner. It is

very likely that in a state of nature the snakes shed their skin more easily, by creeping through the closest shrubs, and as it were combing the skin off; the slough or skin of the common British snake is often found amongst the thick shrubs in woods and other places. I should state that the Cobras which are handled in the way I have mentioned above have had their poisonous fangs extracted; but other snakes that have not been deprived of these fangs are generally separated or shifted by means of a stout hooked wire.—*W. H. Thomas; 15, Hanover Street, Walworth, October 4, 1852.*

[Since the above was written, a man named Gurland, a keeper at the Zoological Society's Gardens, has been killed by the bite of one of the Cobras, with which he was foolishly playing, while in a state of intoxication.—*Ed. Zool.*]

Occurrence of Regalecus Glesne at Cromarty.—On the 17th of September a specimen of this very rare fish was cast ashore near Millar's Stone, in the Bay of Cromarty. It measured 11 feet 10 inches in length, 1 foot 3 inches in depth, and 4 inches in thickness. The head was considerably bruised, and the point of the tail destroyed, which latter accident has befallen all the three well-authenticated specimens yet discovered on the shores of Britain; so that the exact figure and dimensions of the caudal extremity are yet to be ascertained. The fullest, if not the only English description of the *Regalecus Glesne* (which has not yet received an English name), is to be found in 'An Account of the Rare Fish caught off Cullercoats,' published (but it says not by whom) in 1840. It is rather remarkable that two of the well-authenticated instances in which this fish has been found in Britain, have occurred in the waters of the Moray Firth,—one having been cast ashore at Crovie near Macduff, in 1844 (*Zool.* 3460). It will be satisfactory to the readers of the 'Zoologist' to know that the *Regalecus* found at Cromarty has not been lost, as many a rarity is, in the mephitic heap at the fisherman's door; but has been secured and preserved by Mr. Dunbar, for a place in his Museum at Inverness, where naturalists, when they journey so far North, will no doubt examine it, and other objects in that collection, with much interest and profit.—*G. Gordon; Birnie, by Elgin, October 15, 1852.*

Variety of the Common Sole.—I have this morning seen an example of the common sole, of which the under side was piebald, that is, the head and a small portion of the body were white, as usual, the remainder resembling the upper side; and being similarly covered with scales. The line of separation was perfectly distinct, and very irregular. Mr. Yarrell says, "I possess a specimen (of the common sole) that is of the usual dark colour, with rough ciliated scales on both sides." ('British Fishes,' ii. 256).—*Arthur Hussey; Rottingdean, August 10, 1852.*

Capture of Catocala Fraxini at Burton-on-Trent.—I have this day had brought to me, alive and in very fair condition, a specimen of *Catocala Fraxini*. It was caught by a man behind a shutter, in one of the large ale-stores of this town.—*Edwin Brown; Burton-on-Trent, October 2, 1852.*

Proceedings of the Entomological Society.

October 4, 1852.—J. O. WESTWOOD, Esq., President, in the chair.

Since the last meeting the Society has removed from No. 17, Old Bond Street, to more eligible apartments at No. 12, Bedford Row; but the painting of the meeting-room not being completed, the Zoological Society kindly permitted this meeting to be held at their house in Hanover Square, for which favour the meeting passed a vote of thanks.

Mr. Wallace was present as a visitor. He has lost the whole of the valuable collections of Natural History, made by him during several years' residence in South America, by the burning at sea of the ship in which he was bringing them to this country, and he narrowly escaped death in an open boat, from which, after long privation and suspense, and while yet in the midst of the Atlantic Ocean, he and others were taken up by a vessel bound to London.

The following donations were announced, and thanks ordered to be given to the donors:—The 'Zoologist' and the 'Phytologist' for October; by the Editor. 'The Literary Gazette' for September; by the Publishers. 'Revue et Magasin de Zoologie,' 1852, Nos. 6 and 7; by M. Guérin-Ménéville. 'The Athenæum' for August and September; by the Editor. Hewitson's 'Exotic Butterflies,' part 4: by W. W. Saunders, Esq. Dr. C. G. Nees ab Esenbeck's 'Hymenopterorum Ichneumonibus affinium Monographiæ,' vol. ii.; by Mr. Baly. 'Mémoires de la Société de Physique, et d'Histoire Naturelle de Genève,' tome xiii., 1re partie: Genève, 1852; by the Society. Eight specimens of *Haltica pubescens*, taken in August, at Holme, near Peterborough; by the captor, the Rev. Hamlet Clark. Also, the following books, by Miss Eliza Bromfield, in addition to her former donation:—

LINNÆI, Fauna Suecica, 8vo.

„ Museum Ulricæ, 8vo.

RAUPEN Kalender Naturgeschichte, &c., 8vo.

ROSSI, Fauna Etrusca, 2 vols. 4to.

SWANMERDAMM, Biblia Naturæ, 2 vols. folio.

VOGEL, Verhandlungen der Insecten, 8vo.

J. C. Pickersgill, Esq., 36, Gordon Square, was elected a Member; and C. W. Quin, Esq., 25, Clarence Street, Islington, and Mr. R. Shield, Dublin, were elected Subscribers to the Society.

Mr. C. R. Bree sent for identification a larva of *Anthrenus Museum*, found alive in his cabinet. He complained of the difficulty experienced by persons in the country in identifying the insects they found; and suggested that for the benefit of a very numerous class, who were not exactly students, but who nevertheless wished to be better acquainted with the insects around them, it would be very desirable that monographs of our native insects should be published in annual volumes, with a figure of each species;—a work he thought it possible might be accomplished.

Mr. Bond exhibited some larvæ of *Antiolea Berberata*, feeding upon the leaves of berberry, from Cambridgeshire. He observed that like these now exhibited, the colour was usually brown, but sometimes it was luteous, in specimens of the same age.

Mr. Weir exhibited specimens of *Coleophora deauratella*, taken among clover near Tunbridge Wells; and one of the rare *Elachista trapeziella* from the same locality.

Mr. Edwin Shepherd exhibited a box of Lepidoptera taken by Mr. Bouchard near

Dover, in July. The following were the most remarkable species : — *Plusia Orichalcea*, *Spælotis Cataleuca*, *Odontia dentalis*, *Emmelesia bifasciata*, *Stigmonota Leplastriana*, *Semasia rufillana*, *Depressaria nanatella*, *Gelechia bifractella*, *G. neuropterella*, *Ypsolophus Durdhamellus* and *Adela volella* : also a *Vanessa Antiopa*, and pale varieties of *Satyrus Janira* and *S. Semele*, taken in the same locality in September.

Mr. S. Stevens exhibited a *Vanessa Antiopa*, taken on the 24th of September at Hampstead.

Mr. Bond mentioned that he saw a *Vanessa Antiopa* flying in Cambridgeshire last month.

Mr. Hunter brought a number of *Mononychus Pseudacori* for distribution : he took them feeding on the seeds of *Iris sœtidissima*, in the Isle of Wight.

Mr. Hunter mentioned that Mr. Winchester, one of Her Majesty's gardeners at Cowes, had discovered a new method of using sugar as a bait for *Noctua*, by dipping pieces of coarse cloth in the solution, and spreading or hanging them on bushes, &c. ; this was found especially convenient in places on the coast where there were no trees on which to place the mixture, and there was a great saving of sugar, for one preparation of the cloth would be effectual for a week, if the pieces were removed every night. Mr. Winchester had tried putrid soap-suds, after the manner mentioned at the June meeting of this Society, with some effect, but they did not seem more attractive than sugar.

Mr. Douglas exhibited specimens of *Elachista testaceella*, bred from larvæ found on *Sison Amomum* at Lewisham, observing that the larva, its food, and metamorphoses had been figured and described by De Geer about a century ago ; and it was the discovery of this by Mr. Stainton that had led to its present detection. He also exhibited *Roeslerstammia pygmæana*, bred from larvæ mining in the leaves of *Solanum Dulcamara*, and a living larva *in situ*.

Mr. Shepherd said he had found the same kind of larvæ in the leaves of *Atropa Belladonna*.

Mr. Douglas read a paper "On the Identification of the Species of Micro-Lepidoptera whose Larvæ mine in Leaves, described and figured in the 'Mémoires' of De Geer and Reaumur," illustrated by living examples in the leaves of various plants. He also read, from Chambers' 'Edinburgh Journal,' the following account of the habits and manner of capturing the "Groo-groo" worm of the West Indies, now stated to be the larva of a *Prionus*, but mentioned by the Rev. F. W. Hope, in his paper on "Insects used as the Food of Man" (Trans. Ent. Soc. iii. 234), under the name of *Calandra Palmarum*.

"Among the variety of curious insects which are common to tropical climates, the groogroo worms of the West Indies may be considered particularly interesting. From the peculiar manner in which they are produced, and from the circumstance of their constituting a choice article of food for man, they become entitled to some attention.

"The groogroo worm—so called because it is found in a species of palm vulgarly called the groogroo—is the larva of a large-sized beetle, the *Prionus*, which is peculiar to the warm latitudes of America. With the exception of a slight similarity about the region of the head, the worm bears no resemblance to the parent beetle. When full-grown, it is about $3\frac{1}{2}$ inches in length, having the body large and turgid, and increasing in circumference from the head towards the opposite extremity. The head is of a corneous, opaque substance. It has neither eyes nor the rudiments of the

antennæ which distinguish the beetle tribe. It is, however, provided with the mandibles and other oral apparatus of the mandibulate group of insects, and it is only in this feature that any connexion with the beetle can be traced. The trunk is precisely that of a worm; it consists of many closely-knitted segments, which are possessed of an extraordinary contractile power. It bears no mark which would indicate a future metamorphosis into a beetle. There is no sign of a future division into thorax and abdomen. There are no rudiments of wings or feet, as the under surface of the body presents exactly the same appearances as the upper. At the posterior extremity of the worm, however, there is a small horny termination, something like the hinder part of the leech. The organs are exceedingly simple, the digestive being the most developed. Albumen is the substance which composes its body, and its blood is of a greenish tint. With a motion similar to that of the earthworm, it perforates with extraordinary rapidity into the substance of the tree in which it is found.

"When the moon is at her full, the gatherer of worms enters a neighbouring wood, and selects a young *palmiste* tree. This is a tree of the palm order, exceedingly stately and graceful, growing sometimes to the extraordinary height of eighty feet. From the roots upwards, it has not a single branch or shrubby excrescence, but grows beautifully smooth and straight, tapering towards the top. At its top, an abundance of the richest and most beautiful leaves spread out in graceful symmetry, and bend down on all sides, forming a figure like an umbrella; while the young leaf, still firm and compact in its foliar envelope, is seen standing erect in the centre of this foliage, like a lightning-conductor.

"When a promising *palmiste* is found, the gatherer makes an incision into it with a cutlass or a hatchet. This incision is generally in the figure of a half-moon, with the base of the semicircle downwards, and the wound increasing in depth in that direction, so as to expose effectually the flesh of the tree. When this is done, the gatherer marks the locality, and leaves the tree, which he does not revisit for a considerable time. When the moon is in her wane, he returns and examines his *palmiste*. If the young leaf, together with the others, begins to show a yellow tinge at its extremity, and if, on application of his ear to the trunk, a hollow, rumbling noise is heard within, he concludes that the worms have attacked the vital parts, and the tree is immediately cut down; but if these symptoms are absent, the tree is left standing until they appear. The gatherer, however, must now visit the tree frequently, because the transition of the insects is so rapid, that almost immediately after the appearance of the yellow tinge the whole would disappear. When the tree is felled, a square portion of the bark is cut out longitudinally from the original incision upwards, and its fibrous texture laid open. Myriads of worms are then seen voraciously devouring their way through the substance. In capturing them some degree of dexterity is necessary, both to protect one's self from the mandibles of the insects, which inflict a painful bite, and also to save time, by preventing them from burrowing out of sight. When the worms are taken, they are placed into a close vessel, where they continue to retain their activity and vigour.

"The number that can be procured from a single tree, depends altogether upon the season in which it is wounded. If the moon is at her full, they are generally numerous and good—many thousands being found in an ordinary young tree of 25 feet in height. If a few succeed in eluding the gatherer, they do so only to become a prey of as voracious animals, for the wild hogs, or *quencos*, of the forest relish much

the soft substance of the palmiste when in a state of decomposition. It never happens, therefore, that much time passes before they discover any palmiste-tree that has been felled; and as soon as night sets in, they flock in numbers to the spot and devour the whole substance. A gathering of worms, therefore, brings a hunt of quencos; and the gatherer, when his first business is over, chooses a convenient tree, where he places himself in ambush. Seated on a cross branch, he awaits the coming of the animals.

"It is difficult to form an idea of the peculiar excitement of this midnight sport in the thick woods of a tropical country. The usual stillness of the night, and the solitude of the wilderness—the croaking of the night-birds, the movement of every leaf, animated as it is by the myriads of nocturnal insects that fill the atmosphere—the brilliant and fleeting fire-flies traversing the gloom—the strange animals wandering in their nightly prowlings—the approach of the grunting hogs, and the incidents of the hunt: all these things, combined with the idea of isolation when a man finds himself alone in the wilds of a scarcely pervious forest, create an inexpressible feeling of mingled fear, pleasure, and anxiety.

"Before the worms are cooked, they are, each in its turn, carefully pricked with an orange-thorn, and thrown into a vessel containing a sauce of lime-juice and salt. This is for the purpose of cleansing them from the viscid fluids they have imbibed from the palmiste. Notwithstanding this discipline, the worms retain their vitality till they are deprived of it by the culinary process. The simpler mode of dressing them is to spit a number together on a piece of stick or a long orange-thorn, and roast them before the fire in their own fat. The general mode, however, is by frying them with or without a sauce, and when dressed in this manner, they form a most savoury dish.

"Groogroo worms are considered great delicacies in some parts of the West Indies, chiefly in those whose inhabitants are of French or Spanish origin. The good old planter at his table presents you with a dish of worms, with as much pride as an epicure in England introduces you to cod-sounds, eels, or high venison. Nor does it appear that there is any peculiarity in the taste of those who relish the insects; because it very frequently happens, that the stranger, who manifested on his arrival the greatest disgust at the idea of eating worms, becomes immediately converted into an extravagant lover of them.

"It may appear strange that in the tropics, especially, where Nature provides so abundantly for the wants of man, such creatures should be resorted to as articles of consumption; but while we on this side of the Atlantic are shocked at the idea of eating worms, the West Indian consumer in his turn expresses surprise that human-beings can use things which resemble snakes so much as eels, and pronounces it to be the height of uncleanness to eat frogs, as some of the continentals do. Indeed, the groogroo worm is by no means more repulsive in appearance than any of the other unprepossessing creatures which are so highly prized. It would be a difficult matter to decide on the merits of the many extraordinary things which the taste of man, in its morbid cravings, has discovered and converted into luxurious use; and the philosopher finds himself at last driven to take shelter from his own unanswerable inquiries behind the concluding power of that most true, but somewhat musty proverb:—*De gustibus non est disputandum.*"—*J. W. D.*

Some further Account of the Blackbird said to have become White through Fright. By the Rev. ALFRED CHARLES SMITH, M.A.

I REGRET having been prevented last month from replying to Mr. Johnson's query respecting the blackbird mentioned by me (Zool. 3577) as having become partially white through excessive fear. I there unhesitatingly asserted that sudden fright was the cause of this change of plumage, as I had no question that such was the case: now, however, I am bound to add, that though I still entertain the same opinion, and am inclined to believe that the blackbird was frightened into paleness, finding a contrary opinion entertained by Mr. Johnson and another ornithologist, for whose knowledge in such matters I have great respect, I am quite willing to modify my assurance, and only to entertain my present opinion, so long as it is not proved to be erroneous.

I must first remark that this change of plumage in the blackbird took place many years ago, and that the bird is doubtless long since dead. In reply, however, to my inquiries, made in order that I might answer Mr. Johnson's queries, I received the following note from my relative, which I transcribe verbatim:—

“The thing occurred so many years since, that I cannot recollect all the particulars about it, but I will tell you all I remember. In the first place, for a long time after the said Shrove Tuesday (the day for ‘crocking,’ as they call it) the bird, from a very quiet one, became remarkably restless and timid, and the next time he moulted he became partially white and considerably so; but afterwards, I am not certain whether it was the next time of moulting or subsequently, he resumed his wonted black coat, and was alive and quite black when I left the neighbourhood.”

So far, Mr. Johnson is quite right in his surmise that the blackbird would recover his sable plumage; but I now proceed to give my reasons for thinking he is mistaken, in imagining fright to have had nothing to do with this change: and here, too, I hope to answer not only Mr. Johnson's objections, but those of others who may now agree with him.

That fright sometimes is the cause of a change in the colour of the plumage of birds, the late Bishop of Norwich affirms, in his interesting little work on birds. “Fright again,” says the Bishop “(as in the case of human beings, whose hair has been known to change under

great excitement or alarm), it is said, will produce similar effects on birds."—'Familiar History of British Birds,' vol. i. chap. iv. p. 84.

Now, if Bishop Stanley is correct that birds *do* change colour from fright, I think I may lay claim to a *prima facie* case, that the blackbird in question changed colour from that cause; for that he was excessively terrified by the "croaking," is clearly proved by his subsequent and prolonged restlessness, which was so great as to cause fears to be entertained for his life. I have often known caged birds to be very much frightened from a variety of causes, but in no instance before have I seen or heard of the alarm existing for days after the cause of that alarm had passed away. Herein the blackbird shows that he was more than ordinarily terrified; and I repeat, that if the Bishop's statement be correct, the blackbird in question would have been just the subject in which I should have expected a change of colour to appear.

Again, it is an undisputed fact that the hair of human beings has in many cases become perfectly white from sudden and extreme fright: not to mention other well-authenticated instances, I myself know more than one such occurrence, wherein the hair has become in a single night entirely bleached from most agonizing terror. Now the analogy existing between the human hair and the feathers of a bird is very great: their manner of growth, their nourishment by means of juices is very similar; and this is more particularly the case with the germs of feathers, which, before the old ones are shed at the time of moulting, are always led into the cavities vacated by the old ones, and which I conceive must be the more easily acted upon by the withdrawal of the fluid containing the colouring matter, than the perfectly formed and therefore more dried and solid feathers can be. This I conceive to be the reason for the change in the plumage of the blackbird taking place, not immediately upon the fright, but at the next moult after it. But, to render my view of it more clear, it will be necessary in the first place to quote, at some length, the whole method of the production of a feather, as described by some of the writers most worthy of attention on this point.

Malpighi says as follows:—"Birds recently hatched are covered with yellowish hairs, which burst from a follicle, as from a root, in little bundles of more than twelve, and spread on the surface of the skin. These, if followed by tearing away their sheath, are seen to spring from the top of a very small delicate transparent follicle, containing the rudiment of the feather, which, as it grows, presents the appearance of a black sheath beneath the skin. The sheath or membranous

tube is inserted in the hide, on a papilla perforated in its centre by the umbilical vessel of the former, which, if torn away, is followed by bleeding. Within the sheath is contained a softish mucous follicle, of an ashy colour, with bloody spots; but although it seems to consist of fibres longitudinally arranged, there is really no organic structure but the umbilical vessel which runs through it lengthwise. From the sides of the follicle, about its base, little black plumules arise, and from its tip some white ones, from which hairs stretch out, and the tip of the sheath opening as the growth proceeds, the extremities of these plumules with their conjoined hairs burst forth, and the sheath being further opened, the follicle appears, forming the stem, dried at its tip, and divided into empty membranous chambers, whilst its remaining or lower part is softish, and gives origin laterally to the plumules with the hairs, which, when the sheath is torn off, are withdrawn with it, and the whole extent of the stem, from the tip to the bottom of the follicle, is seen: the follicle, as an uterine placenta, providing the growing material of the feather, presenting first the upper, subsequently the lower part of the stem, and finally the barrel of the feather. The follicle is a cylindrical tube, formed of delicate membrane, inclosing a series of utricles of different sizes, proportionate to the quantity of fluid contained, which is gradually absorbed in the growth of the feather; thus where the fluid is actively propelled, the chambers are conical, as may be observed when vegetation first commences about the stem, the apex of which is first gradually lengthened; to this succeeds the production of the barrel, when the chambers again elongate towards its apex, but as they descend, the resistance of the cartilaginous tube compels a change of form, and the conical shape being lost, the chambers assume the appearance of numerous valves piled on each other. When the generation of the feather is perfected, the barrel or elongated tubular part of the feather becomes solid. The barrel is a cartilaginous substance, by which probably the whole stem is covered, and being folded externally, forms the plumules, and finally hollowing itself into a tube forms the barrel. At the part where the stem ends in the hide, the shrivelled follicle bursts forth, but the rest is contained within the barrel, the external membrane of which, so closely connected at the middle that it can scarcely be separated, is obtained from the sheath, but the upper part subsides into scales. If the barrel be opened prior to its solidification, the contained follicle is found loaded with fluid, and externally its thick investment is overspread with blood-vessels. When the growth is completed, and the feather becomes solid, plumules are produced from the cartilagi-

nous substance, and the remnant of the dried and protruding follicle is apparent, as also the solid pointed tip of the barrel with its aperture. The shrivelled follicle contained in the barrel contracts into a variable number of chambers, exceeding twenty, which are sharper at the upper part, where the still recognizable umbilical vessel may be traced to the protruding part of the follicle, more obtuse in the middle, and more numerous at the bottom. The interior of the stem is filled with numerous very small white vesicles, resembling elder-pith, and mostly of an oval shape, extending from the insertion of the follicle to the very tip of the feather."—Malpighi, *Opera Posthuma*, p. 96.

Cuvier adds but very little to this statement. He says if the sheath be opened just as it penetrates the skin, it is found to consist of numerous cylindrical layers of horny and transparent matter, inclosing a cylinder of gelatinous substance, in which blood-vessels run; that its top is conical and much harder than the other part, and that it is enveloped with a layer of black matter, which is the first rudiment of the barbs of the feather, which, when the cylinder bursts the sheath, and is exposed to the air, splits as it dries, and forms the first barbs, and that the stem of the feather elongates and hardens at the same time. More of the cylinder then protrudes, and an additional quantity of barbs and stem are thus produced, until the whole of the vanes and shaft are perfected. After which the barrel or tubular part solidifies and becomes continuous with the shaft, of which it had previously contained the germ.—See Cuvier, '*Leçons d'Anatomie Comparée*,' iii. 604.

Should any one feel inclined to investigate this interesting subject further, let him consult Dutrochet's "*Observations sur la Structure et la Régénération des Plumes, &c.*," in '*Journal de Physique*,' lxxxviii. 333; Fredk. Cuvier's "*Observations sur la Structure et le Développement des Plumes*," in '*Mémoires du Muséum*,' xiii. 327; and, for Albert Meckel's views, '*Archiv. für die Physiologie*,' xiii. 37.

Now from the above quotations it seems clear to me that there is a very close analogy between the human hair and the growing feather: both spring from a follicle, sheath or capsule; in both there is a shaft or stem; in both there is a barrel; both are nourished by juices in which the colouring matter is supposed to reside, (though in the case of human hair, no less than in the case of feathers, great difference of opinion seems to exist as to the cause of the colour). But there is this great difference between the two as regards the matter in question, that whilst the human hair is always growing, and is therefore being always nourished by the juices; the feathers, when once perfectly developed, remain fixed in their sockets in the skin, to which,

without being organized, or at least having but a very low degree of vitality, they are connected in a somewhat similar manner to that of the connexion of the teeth with the membrane of the gums, and so remain till the time of moulting, when their attachment becomes loosened, and at last they fall out, not, however, as I before said, until they have led the feathers which are to succeed them into the cavities they are about to vacate, in precisely the same way as the first plumage had been brought through by the down with which the bird had been first clad.

If then the blackbird had assumed his mottled hue *immediately* after his fright, and the perfectly formed and dried feathers had become white in lieu of their former black, I should have been at a much greater loss to comprehend how the change was effected: but now, seeing that he did not "show the white feather" till long after his alarm had ceased, may not the germs of the feathers which at the next moult appeared white, have been already sufficiently formed to be at the root of the then existing feathers? — and may not sudden fright have so disarranged the natural and habitual functions of the bird, as to have had the effect of withdrawing the colouring matter from these incipient feathers, just as we know that a total loss of colour has occasionally taken place on a sudden in the human hair, from some violent mental excitement?

The more I reflect on this matter, the more am I strengthened in my opinion that terror was the cause of the blackbird assuming his mottled dress. Looking at the account of the formation of feathers as detailed above from Malpighi and Cuvier, and the great analogy existing therein between them and the hair of human beings, and not forgetting the statement of Bishop Stanley that fright will produce the same effect upon the plumage of birds as upon the hair of man; taking into account at the same time the manifest signs of extreme terror exhibited for days by the bird; I cannot but conclude at present that fright caused by the "crocking," as I before said, was the reason of the blackbird becoming partially white.

Of course, I would not for an instant be understood to say that I consider fright to be the *only* cause of birds turning white or mottled. I quite agree with Mr. Johnson, that the occurrence of white blackbirds, rooks, jackdaws, swallows, sparrows, larks, &c., is sufficiently common; I do not at all pretend to account for them, or any other freaks of Nature, such as albino varieties, not only amongst birds and quadrupeds, but even amongst the human race: neither would I make fear (of cold) the acting cause of the assumption of a white

dress among the winged and furred denizens of Scandinavia at the approach of their rigorous winter : but without attempting to account for all such occurrences, and presuming that they spring from a variety of causes, I conclude that the effect is always produced in the same manner, *viz.*, by the withdrawal of the pigment, or colouring matter, from the fluid which nourishes the feathers, whether that failure of the pigment be the result of terror, or any other accident or physical cause.

ALFRED CHARLES SMITH.

Old Park, Devizes,
November 4, 1852.

Experiments with Venomous Serpents. By DANIEL T. EVANS, Esq.

THE subject of animal poisons having, through the late casualty at the Zoological Gardens, attracted public notice, it occurred to me, when in the country, that the publication of some notes of the first of a series of experiments on animals bitten by venomous serpents might be both interesting and serviceable, and upon my return to town, I proceed to embody them in writing and place them at your service. Their origin was as follows : — In the course of last spring, I was informed by my friend, Dr. Richard Quain, in a conversation upon animal poisons, that Mr. Squire, the well-known chemist, had told him he was desirous of testing the efficacy of a powder called Simaba Cedron, in high repute among the Indians as a remedy for the bite of poisonous reptiles. No experiments as to its merits having been made in this country, I at once suggested a trial of it in the Zoological Gardens. Dr. Quain, whose love of science in every form is only equalled by the ardour and ability with which he pursues it, at once concurred, and I wrote to the Secretary of the Zoological Society for permission to try the remedy on animals bitten by serpents in the Society's collection. This was promptly accorded, and I have pleasure in adding that the Society, justly appreciating our motive, handsomely, and of their own accord, undertook all charges for animals and *matériel* — Mr. Mitchell, the Secretary, stating their "anxiety to afford all possible facilities for carrying out the investigation."

And here, in order to justify our proceedings to all who may read the subjoined report, and effectually to silence objections on the ground of cruelty, I feel it necessary to say that these experiments were not instituted in a spirit of vain and wanton curiosity, but with

an earnest purpose to try the efficacy of a reputed remedy ; and, that failing, in the hope to obtain such information as to the nature of the venom and its mode of operation, as might extend our knowledge of animal poisons, and possibly suggest the means of counteracting their effect, whenever occasion for so doing might unhappily arise. It is hoped and believed that the following notes will not be read without profit by the philosophic as well as the general reader.

The experiments took place on the 8th of July, in the presence of Dr. Quain, Mr. Mitchell, Mr. Squire, Mr. Wyatt, and myself. The animals experimented on were rabbits, guinea-pigs, and sparrows ; and the serpents to whom they were offered were rattlesnakes, cobras, and puff-adders. The cobras, though tempted with birds, remained passive, and could not be provoked to bite. As some general characteristics appertain to all the experiments, it may be well, before entering upon the notes of each particular case, to throw them together and lay them before the reader at once. First, then, upon the introduction of an animal into their cage, the serpents became greatly agitated, raising themselves, and moving with a quick angular motion into attitudes of defence—sometimes, indeed, showing fear, evidenced by retreat into the tank containing water below the level of their cage. This, however, soon subsided, and one of the group, as if by general consent, was left watching the prey and showing a purpose to strike it. The others coiled themselves up, and thereafter showed the immobility for which reptiles are remarkable, both puff-adders and rattlesnakes permitting the rabbits and guinea-pigs to walk over them with impunity. The attitudes and movements of the serpent intending to bite were very striking and beautiful. In the first place, he made, with the posterior half of the body, a bold curve, having a strong prehensile “purchase” on the floor of the cage, so as to secure a steady fulcrum for the rapid dart made at the time of the bite. The upper half of the body was raised some ten inches or a foot, the neck strongly arched, and the head, bent at nearly right angles with the neck, was poised directly opposite the prey. In such position the serpent remained a greater or lesser time (sometimes as long as twenty minutes) according to circumstances. During this interval, the slightest motion of the animal before him was followed by an instantaneous and corresponding movement of the head and neck of the serpent. The purpose seemed to be that of aim-taking, for the eyes were intently fixed upon the prey ; but I am by no means sure that the snake, knowing that the latter cannot escape him, does not derive pleasure from this prolonged and intent gaze. At all events, in one experiment,

where the head of a rattlesnake so engaged was sideways to the glass of the cage, and near it, I observed, and called attention to the fact, a remarkable vermicular motion along the course of the poison-gland to the opening of the angle of the mouth, which we thought might afford him pleasure, and this continued until the snake struck his prey. All these serpents seem to prefer striking when the animal is about a foot distant; when directly under and close to the head they would not strike. The blow itself was very rapid; and although the united purpose of five observers was to detect the spot where the wound was inflicted, it was seldom any one succeeded. The puff-adders at first hissed violently, and swelled to double their usual thickness; one of them struck at us, but was foiled by the intervening glass. The cobras raised themselves and spread out their beautiful hoods. The rattlesnakes retired and then advanced, but emitted no sound; and the one that did not bite soon returned to his former passive condition. The bite of the rattlesnake, as will be seen, caused the most speedy death.

So far the serpents. I now proceed to describe the peculiarities shown by the animals on which we experimented. Some philosophers have denied innate ideas to man; these and some others have furthermore denied an instinctive apprehension of danger in animals. They say that of itself, as born, the hare has no dread of the hound; that its fear is acquired of experience. I concur in neither of these opinions, and think the latter altogether refuted by the conduct of the animals exposed to serpents in these experiments. Not one of the guinea-pigs or rabbits (which were all something under their full growth) had ever seen a serpent, yet when introduced to the cage they showed unequivocal symptoms of distress and fear. In some instances they actually screamed before they were struck. They generally showed restlessness at first, but when the serpent, intending to strike, poised himself in front, they became for a time, if not altogether, motionless. Is there such a thing as "fascination?" If by this is meant a pleasurable paralysis of the animal's powers, I think it more than doubtful; but a deprivation of the power of motion from terror may, perhaps, take place. All, however, that I speak to is a perfectly motionless condition of snake and prey, lasting several minutes. In one case, however, a rabbit (without being compelled by us to move and aggravate the serpent, for our exhausted patience necessitated the hurrying of the bite) in the course of a few minutes seemed to forget its danger, sat up like a squirrel, rubbed its face with its paws, and moved indifferently about the cage, treading upon other snakes

without hesitation. I now proceed to detail the experiments, adopting the curt form and language of my notes.

First experiment.—Puff-adder (*Clotho arietans*) and guinea-pig.—Struck by snake and screamed at 8 h. 54 min. a.m. Convulsions supervened in one minute. An infusion of the Simaba Cedron was poured freely down the throat, and the moistened powder applied to the wound. The convulsions (like a painful hiccough) gradually increased in violence and frequency. At five minutes after the blow the pupil was insensible; the animal gasping for breath; its nose, lips and feet (originally flesh-coloured) became first pale and then livid. In $8\frac{1}{2}$ minutes the convulsions had ceased, the bladder contracted and emitted its contents, the quantity being very large for the size of the animal. In 10 minutes the guinea-pig was quite dead. After this we could not induce another puff-adder to bite. We tried the cobras with a like disappointment.

Second experiment.—Cascarilla rattlesnake (*Crotalus horridus*) and guinea-pig. — Struck behind the ear, near the jugular vein; dead before he could be carried to the table, certainly within a quarter of a minute. There were no convulsions. Unable to use the antidote. On a dissection roughly made by Dr. Quain (for, our object being to test the value of an alleged remedy, and not to note all the morbid appearances, we had not provided proper instruments), there was observed an effusion of dark-coloured blood below and around the wound; it extended from the jugular fossa to the spinal canal, and even within it, giving to Dr. Quain an impression that the spinal cord itself had been injured more or less by the powerful fangs of the serpent—a conclusion which would account for the wonderful rapidity of death. One very interesting fact was witnessed in this experiment. I saw, for the first time, the beating of an animal's heart. It has been stated that the heart of Bellingham, the assassin of Mr. Percival, beat for a considerable time after removal from the body. Several minutes after apparently complete death, the heart of this animal continued its pulsations. For every contraction of the apex of this organ, there seemed to be two of its auricles, which were gorged with venous blood. Generally there was much congestion of the vessels.

Third experiment. — Same snake and a guinea-pig. — Struck and screamed at 9 h. 26 min. 45 secs. The bite was on the left side, near the hind leg. In ten seconds the eye closed, and there followed a complete paralysis of the hind quarters. The remedy was applied. Slight convulsions supervened. Spasm of the diaphragm and gasping for breath within four minutes; pupil insensible in six minutes;

animal dead in ten minutes. It is remarkable that in the last two experiments there was far less convulsion than in the case of the animal bitten by the puff-adder.

Fourth experiment. — On a sparrow. — A sparrow was inoculated with blood taken from the right auricle of the guinea-pig dissected, but it produced no perceptible effect.

Fifth experiment. — Same rattlesnake and a rabbit. — Struck underneath the right thigh at 10 h. 4 min. 20 secs. The antidote administered and applied within a minute. The right leg was immediately paralysed, and it dragged. At 10 h. 7 min. 30 secs. both hind legs were paralysed. Panting for breath at 10 h. 8 min. He seemed to have partially recovered the use of his hind legs, and lost that of his fore legs at 10 h. 11 min. We thought him dying, without convulsions, at 10 h. 12 min. 15 secs. Subsequently, the animal, after recovering the use of his fore legs, and once more losing that of the hind legs, seemed to rally; and to give him the better chance, he was removed from the reptile-house and laid on the grass in the sunshine, but he died at 10 h. 40 m., having survived the bite just half an hour.

Sixth experiment. — Same rattlesnake and a strong rabbit. — Struck at 10 h. 30 min. 7 secs. in the ear, which immediately drooped. The bite perforated the ear completely, about an inch from the base. The rabbit shakes his head and ear; we place him on the floor and he runs about. In ten minutes he seemed none the worse; he was therefore again put into the cage, and struck near the root of the same ear, about half an inch from the right eye, at 10 h. 48 min. The remedy was applied. He screamed as if from pain in about a minute, and cried a second time a few seconds afterwards. Slight spasms supervened at 10 h. 50 min.; he was quite dead at 10 h. 52 min. Lived just four minutes. Dr. Quain dissected the animal five minutes after death, and found an effusion of dark blood in the course of the wound, such as described in Experiment 2. The fangs had perforated the carotid canal, and the vessel there contained a coagulum about half an inch in length, which nearly filled its cavity.

Seventh experiment. — On a sparrow. — I inoculated a sparrow on the inside of the wing, near the heart, with blood from the wound caused by the fangs of the rattlesnake, but without apparent effect, for in fifteen minutes he seemed uninjured. This accords with Dr. Russell's experiment by inoculation made in India. The keeper afterwards told me that one of the two sparrows died the next day, but not, he thought, from the inoculation, for he found sparrows frequently die in the reptile-house when untouched by the serpents.

With this, the first series of our experiments closed, but we purpose a second upon stronger animals, such as cats, dogs, and goats.

These experiments ought to be, and, I hope, will be, considered equally interesting by the philanthropist and the medical philosopher. That they are not devoid of practical value, I hope to show by the following remarks. The first observation that arises is that the alleged remedy proved inefficacious. It may, indeed, have had some effect in the case of the rabbit that survived during half an hour. But it would, nevertheless, be unsafe to reject the Simaba Cedron as an antidote because it here failed, inasmuch as death followed so rapidly that there was small opportunity for its action. It is not until it shall have been tried and have failed upon stronger animals, that, in the face of the experience of the Indians in hot climates, it should be repudiated. It is remarkable that the poison of the rattlesnake and of the puff-adder operated in a different manner. There was very little convulsion in the animals bitten by the former; they seemed to have their vital powers paralysed at once, to sink into a comatose state, and die: while the spasms and convulsions following the bite of the puff-adder were violent, and increased in force and frequency until death ensued. The fourth bite of the same rattlesnake caused death in four minutes.

Some interesting questions arise on these experiments. What is the action of this deadly poison? Is it through the blood or the nervous system? There are presumptions both ways. The probability that it acts through the blood, reposes on the observed fact of discolouration around the wound, and the coagulum found in the carotid artery, as described in Experiment 6. On the other hand, the presumption that it operates directly on the nervous system, is strengthened by the following observations:—1. By the extreme rapidity of death—the animal in Experiment 2 seeming to die instantaneously; 2. By the observed effect of immediate paralysis of the limb nearest to the wound, followed by paralysis of the corresponding limb, though death did not immediately follow (Experiment 4), and the drooping of the ear of the rabbit (in Experiment 6) simultaneously, as it appeared to us, with the bite. May not the poison act both through the circulation and the nervous system? For my own part, I think it does, and that any remedy, to be efficacious, must operate on both.

One word in conclusion respecting the ill-fated keeper, Gurling. He it was who assisted at the experiments here narrated. His enthusiasm for his occupation was (not merely on that occasion, when it was noticed by those present, but on many others) very conspicuous

—so much so, in fact, that in a copy of my notes, transmitted to the Zoological Society at the request of the Secretary, I thought it right to praise him. I seldom visited the Gardens but he had some intelligence respecting the habits and peculiarities of the reptiles to communicate; and for the sake of science, whose interests his observative habits would in some degree have promoted, as well as from a feeling of humanity, I lament his premature death. He has left a wife, as I am informed, totally unprovided for; and I hope that, as she is deserving of sympathy, she will receive assistance both from the Zoological Society and the public. The indiscretion of her husband was her misfortune, not her fault; and he atoned for it by a sudden and a fearful death.

DANIEL T. EVANS.

5, Elm-court, Temple, November 1.

[This article was published in 'The Times' newspaper of November 9, 1852. —
Ed. Zool.]

On the Method of Preserving Spiders, &c. By R. H. MEADE, Esq.

AMONG the many interesting observations on various animals given in the 'Zoologist,' few are to be found concerning the Arachnida, or spiders. The reader neither meets with critical remarks on their genera and species, notices of the capture of rare specimens, nor, with a few exceptions, any observations on their habits and economy.* This neglect cannot be ascribed to their being deficient in interest, as the spiders must be classed among our most ingenious and sagacious animals; but it shows that very little attention is bestowed upon them by British naturalists. There may be several reasons for this neglect, and among others, the great difficulty attending the determination of species may be mentioned, arising from the close resemblance between allied species, and the want of good books on the subject; † but the chief reason, I believe to be the difficulty of preserving specimens. I

* A brief anecdote of a hunting spider, probably the *Salticus scenicus*, by Mr. Guyon, will be found in a previous page, (Zool. 3600).

† The only systematic work that attempts to give a complete description of the species of the Arachnida, is Walckenaer's '*Histoire Naturelle des Insectes Aptères*;' but this does not comprise more than about two thirds of the already named British species, accounts of which from the pen of Mr. Blackwall will be found in the '*Transactions of the Linnean Society*,' in his '*Researches on Zoology*,' and scattered through different scientific periodicals. I hope we shall soon see a complete work by this gentleman, on the British spiders.

will now endeavour to state how this may be effectually got over, and the shape and colour of most spiders preserved in equal perfection with those of many insects.

The method recommended is, to inclose the specimens in small glass bottle tubes, made of thin glass tubing, each about an inch and a half long, with a flat bottom, which prevents them from breaking easily when standing on end, and with a small lip all round the upper edge, which enables them to be closely corked. These tubes should be of various diameters, from one-eighth to half an inch, and should not be much wider than the bodies of the spiders inclosed in them; this causes the specimen to be retained in one position, and enables it to be more easily examined with a lens, without removal from the tube.

After the spider, which has been previously killed by immersion in spirits of wine, is placed in the tube, the latter must be filled with rectified spirits, and closely corked with a small soft cork. The smaller specimens preserve their form best in a mixture of three parts alcohol and one of water. The bottles may be kept in a drawer or box in an upright position by means of a thin piece of board or card, in which a number of holes have been pierced of the size of the tubes.

I lately forwarded to the Museum of the Entomological Society a few species preserved in the manner I have described, and I shall feel highly gratified if the inspection of them should induce any naturalist to take up the study of these interesting animals. I shall have great pleasure in sending one or two specimens by post to any gentleman who will do me honour to apply for them, and shall also be happy to name any spider about which there may be a doubt.

Although Kirby and Spence, and Blackwall, in England, and Walckenaer in France, have recorded much regarding the habits and economy of spiders, yet a wide field remains unexplored, which will richly repay the inquiry.

Many spiders are nocturnal in their habits, and require to be watched at night by the aid of a lantern, the light of which does not seem to disturb them. This is the time when they principally construct their webs, and when many of them chiefly capture their prey. The large and curious *Epeira umbratica* generally lies concealed during the day in some crevice or under a piece of decayed bark; but at night it may be found seated in the midst of its coarse web, which is frequently fixed between some posts and rails; and here it looks out for any unlucky moths which may get entangled in its toils, its food chiefly consisting of the larger nocturnal Lepidoptera.

The common *Epeira callophylla*, which so frequently constructs its web on the outside of windows, is also nocturnal in its movements, and will constantly be found in its web after dark. I have noticed of this species, that if touched, it instantly feigns death, doubling up its legs, and dropping towards the ground; it always spins a thread, however, as it descends, which remains attached to the spot from which it fell; and if the observer stands still a minute or two, he will generally see the spider gradually climb up this thread again, to the place it before quitted.

Many species now considered rare, are so only because their peculiar haunts are not known. One, named by my friend Mr. Blackwall *Linyphia insignis*, was described by him from a single female specimen, the only one he had seen before I sent him several last year. I find this spider exceedingly common in the woods about this neighbourhood, but always on the same plant, namely on the fronds of the male fern (*Lastrea Filix-mas*), between the leaflets of which it spins a small horizontal web; and probably it may be found in the same situation in other parts of the country. The woods in which it occurs are full of the common brake (*Pteris aquilina*), but I never succeeded in meeting with a single specimen upon this fern. This spider probably feeds upon some insects (chiefly perhaps small Tipulidæ) which are attracted by this plant: and that there is some peculiar attraction of this sort about the male fern, appears probable, since I find it a favourite resort for several other spiders, besides the *Linyphia insignis*. I may mention the *Linyphia pratensis*, *Wider*, *L. alacris*, *Blackw.*, and *L. pulla*, *Blackw.*: the last two are new species, which I discovered this last summer,* and both of which I have found in considerable numbers on the under sides of the fronds of this fern.

R. H. MEADE.

Bradford, Yorkshire, November 8, 1852.

A List of the Crustaceans of the Moray Firth.

By the Rev. GEORGE GORDON.

In the systematic works on the Animal Kingdom, the Molluscou tribes succeed those of the Fishes. This order would have been pursued in the publication of these papers in this journal (Zool. 421, 502, 551, 3454, 3480), which are intended to enumerate the known animals

* Descriptions of these by Mr. Blackwall will shortly be published.

of an interesting locality in the northern part of the Island: the list of the Mollusca of the Province of Moray is, however, delayed for a little, that it may be made more complete than it now stands. Of the Insecta of the district, which also should precede the animals now to be treated of, it must be confessed that they have hitherto been almost wholly neglected by naturalists. This neglect of a department of Natural History which, in other quarters, is among the first to attract notice, is much to be regretted; and the more so, as a better field for entomological pursuits is not often to be met with, at least in North Britain. Here, within the range of a day's journey on foot, the entomologist could pass from the rocky or the sandy sea-shore, first through the low country, with its rich old cultivated fields, and then through the moss and moor of the upper flats, to the subalpine heights of the Grampians, which bound the southern part of the province; while on every side, woods (indigenous and planted), rivers and lochs invite his search, by the fair promise of many a rare capture for his cabinet. In the wheat-growing part of Moray, the temperature which, from the natural drainage afforded by its wide-spread drift-beds and terraces of gravel and sand, is higher by some degrees than that of the adjoining regions, also holds out the prospect of this locality, were it thoroughly examined, giving a more northern range for many species of insects than is at present assigned to them.

While a few are to be found on land and in the fresh waters, the ocean and its shores form the great domain of the British Crustacea. Wherever this wide domain can be approached from our sea-girt isle, let no one despair of finding ample materials for the study of Carcinology. It has been said that there are always rare plants where botanists reside: the same remark may be made of the Animal Kingdom. The lap of Nature is ever full, and is spread widely out; it requires but the observant eye to detect, and the thoughtful mind to appreciate, and to gain wisdom from, its ever-ready stores.

Hitherto the Moray Firth has been reputed one of the more barren of ocean fields for the researches of the naturalist. Resident observers have been accustomed to look upon its Crustacean Fauna as if it consisted almost wholly of the crab (*Carcinus Mænas*), the parten (*Cancer Pagurus*), and the lobster; and beyond Pennant's notice of his *Astacus Bamfficus* (*Munida Rondeletii* of Bell), there are few rare species that have it recorded as one of their localities. The following list of the Podophthalmi (Crustaceans having their eyes on foot-stalks) will give, it is believed, a better augury of this locality, and will gain for it a higher place than it was wont to hold in the estimation of

zoologists. This list contains nearly one half of the species published by Professor Bell in his 'History of British Crustacea,' and about thirty of those to which, on account of their rarity or other peculiarities, he has added special localities. When it is considered that the animals here enumerated have been met with and collected within a short period, from comparatively a small portion of the Moray Firth, and with no fixed plan or proper apparatus, there is certainly held out to other observers the promise of many additional rare and interesting species. No doubt all the species now extant in this Firth, have been there for ages past; and the earliest haddock that lived in this arm of the sea, like its representative of to-day, occasionally devoured the *Calocaris*, and picked up the *Aluana*, long ere there were a McAndrew and a Goodsir to get a glimpse of any of these still rare species; and the first lines of the fisherman that were shot from a boat into its waters, even then drew up the rough *Eurynome* and the small *Galathea*: but these treasures of the deep, like many a living gem to-day, were cast away or fell into the abyss again, unnoticed and unknown.

Their varied and oft-times very singular forms, the facility they afford for preservation in the cabinet, the vast amount of information that has yet to be acquired of their haunts and habits, and (when this information shall have been in some measure attained) the fresh proofs of the Creator's power, wisdom, and goodness,—proofs to be gathered from the minutest parts of their multiplied organs, showing here, as throughout the whole Animal Kingdom, when attentively examined, a wondrous and beautiful adaptation to the functions assigned them to perform,—these are some of the inducements to be held out for the collection of specimens of this curious tribe of animals, and for the further study of their economy, by those who have it in their power. And there are few who do not possess this power, if they would but use it. The search by the sea-shore, from the high-flood mark—where the carapace, or the whitened skeleton of these denizens of the deep, may often be found—down to the lowest ebb-line—where many a living Crustacean may be caught, quietly ensconced in the crevices of the rock, or sheltered among the sea-weed, waiting the return of the tide, is the first and readiest mode of obtaining specimens by the beginner. Then the fisherman's boat and his lines are to be narrowly examined; and, when fresh from the fishing-ground, they are often found to yield new and interesting specimens. The fisherman himself, observing the interest excited by what has been by sheer accident brought ashore, will the more easily be induced to retain on board and bring to land animals that he had long been accustomed to cast

from him as worse than useless. The dredge and the shrimp-net will not be neglected by any who have the means of plying them, as being two of the best modes of obtaining objects for investigation. But perhaps the most plentiful source which the student of the British Crustacea can have recourse to, is the stomach of the cod, the haddock, and the various other kinds of fish killed on our coasts. "The stomachs of fishes," says Prof. Forbes, "are often zoological treasures. The haddock is a great conchologist. In his travels through the country of the mermaids he picks up many curiosities in the shell way. Not a few have been discovered by him; and the ungrateful zoologist too frequently describes novelties without an allusion to the original discoverer."—'British Star-fishes,' p. 37.

Except when otherwise noticed, all the species of this list have been found on the shores of the Moray Firth, between the Spey and the Findhorn, gathered from the boats and lines of the Stotfield and Lossiemouth fishermen, or collected from the stomachs of fish caught by them in their ordinary fishing-grounds lying from five to fifteen miles from the shore. Specimens of all the Crustaceans here noticed are, in a more or less perfect state, to be seen in the Elgin Museum. The order and scientific names are adopted from Bell's 'History of British Crustacea;' and, in a few cases, where they differ from Prof. Bell's nomenclature, the English names are taken from Mr. White's 'Catalogue of British Crustacea in the British Museum.'

Slender-legged Spider Crab, *Stenorhynchus Phalangium*. Frequent. Dredged, August, 1852, five miles off Lossiemouth.

Slender-beaked Spider Crab, *Stenorhynchus tenuirostris*. Occasional. By no means so abundant as the preceding species. The late lamented Mr. W. Thompson, in his list of Irish Crustacea in the 'Annals of Natural History,' says "I look upon *S. tenuirostris* and *S. Phalangium*, although extreme forms are very distinctly marked, to be in reality but one species."

Scorpion Spider Crab, *Inachus Dorsettensis*. The most abundant of the slender-legged crabs (*Leptopodiadæ*) in the Firth. On one occasion, twelve full-grown specimens were taken from the stomach of an ordinary-sized cod, of which fish, in this locality, it seems to be a favourite morsel.

Slender-armed Spider Crab, *Inachus leptochirus*. Five specimens of this "extremely rare" crab were taken from the stomach of a cod in 1849; and a few more have since been met with in similar localities.

Great Spider Crab, *Hyas araneus*. Very common; often found near

low-water mark. Called by the fishermen sea "teads," *i. e.*, toads : it is the Cancer Bufo of Herbst.

Contracted Crab, *Hyas coarctatus*. Not unfrequent. Several very small specimens have also been found, which at first sight have an apparent specific difference in their aspect, and thus the *H. serratus* of Hailstone may have originated. This Crustacean, although it has obtained, in English, the most forbidding name of "the contracted crab," is very pretty and well formed.

Strawberry Crab, *Eurynome aspera*. One very small but distinct specimen was found among some other small decapods which the Rev. Mr. Weir had collected at Lossiemouth from the fishermen's lines. It must be comparatively rare in the Firth.

Great Crab, *Cancer Pagurus*. "The Parten." Abundant in the rocky parts of the coast, and, except the lobster, is the only Crustacean brought to market in the Province of Moray, where at no season it is a favourite article of food with any class of the community. The provincial name seems to come from the Gaelic "Parstan."

Common Shore Crab, *Carcinus Menas*. "The Crab." By far the most abundant and most easily obtained of all the larger Crustaceans. It is found all along the shore, and at times pretty far up the mouths of streams and rivulets in the fresh water. It lives too close to the land to be the food of any of the fishes. "The crab," as it is called, *par excellence*, is never used in this district as food, even by the poorest. It is occasionally employed as bait, particularly the "peelarts," as those that have just cast their shell are called.

Pennant's Swimming Crab, *Portumnus variegatus*. Until September, 1852, when it was dredged close in-shore in the Bay of Lossiemouth from among pure sand, the only locality in the Firth for this, "the most beautiful of the British crabs," was near the Covesea Lighthouse, where several specimens were discovered by Dr. Gordon in 1848. Like the crab, it seems never to move so far from the land as to become the prey of any of the more rapacious fish.

Velvet Crab, *Portunus puber*. This fine species is rarely met with on the Elginshire coast ; only three specimens have been found, at Stotfield, near low-water mark, in a stream tide. Mr. Harris mentions it as occurring at Gamrie, (Zool. 3002).

Cleanser Swimming Crab, *Portunus depurator*. Very abundant, particularly in the various fishing-grounds in the Firth.

Marbled Swimming Crab, *Portunus marmoreus*. Rare.

Dwarf Swimming Crab, *Portunus pusillus*. This seems the most abundant of the genus. Dredged five miles north of Lossiemouth.

Common Pea Crab, *Pinnotheres Pisum*. First made known as a denizen of the Moray Firth, by Dr. Innes, Forres. It has since been occasionally met with, as at Lossiemouth, *Rev. Mr. Weir*. The larger specimens of the common mussel at the bar of Findhorn are reported as not unfrequently containing the pea crab.

Pennant's Nut Crab, *Ebalia Pennantii*. Rare.

Cranch's Nut Crab, *Ebalia Cranchii*. Frequent on the fishing-grounds. Dredged in August, 1852, five miles north of Stotfield-head. This crab frequently affords the best preserved specimens of Crustaceans that are to be found in that curious agglomeration of the vestiges of organic life — the contents of the fish-stomach. From their small size, they often escape the bruising power of the teeth, and the hardness of the carapace resists for a time the attrition and the dissolving power to which they are afterwards subjected.

The Face Crab, or Circular Crab, *Atelecyclus heterodon*. Occasionally met with in the Moray Firth.

Northern Stone Crab, *Lithodes Maia*. This is "one of the rarer species of our British Crustacea," as well as one of the most attractive, from "the spiny armature of the body." It has been found both at Lossiemouth and at Gamrie, from which latter place there is a fine specimen sent to the Elgin Museum by Mr. Harris.

Common Hermit Crab, *Pagurus Bernhardus*. The young are very abundant in almost every pool left on the rocky shores by the tide, and are most ignorantly looked upon, by many who should know better, as the spawn of the lobster! The older individuals, inhabiting the larger univalves, are frequently brought up from the deep sea, entangled in the fishermen's lines or nets.

Pagurus Cuanensis. A specimen from the Moray Firth, closely resembling that figured under this name, is placed in the Elgin Museum.

Pagurus levis. Frequent in the Firth, and, judging from the habits of the fishes that prey upon it, it does not come near the shore.

Minute Porcelain Crab, *Porcellana longicornis*. Frequently to be met with in small communities under stones at low water. They are to be found abundantly on "the Skerries," off Covesea light-house. The voracious cod does not overlook this puny Crustacean; but, in feeding on it, makes numbers compensate for its small size. The other British species, *Pagurus platycheles*, although known to extend "from the Orkneys to the Land's End," has not yet been detected in the Moray Firth.

Common Plated Lobster, *Galathea strigosa*. Two fine specimens, procured at Stotfield by Mr. James Scott, in 1852, and those noticed

by Mr. Harris at Gamrie (Zool. 3002), are all the instances that as yet can be recorded of this species having occurred in the district referred to in this list.

Embleton's Plated Lobster, *Galathea nexa*. Frequently brought up by the lines set for haddock and cod-fish. Dredged off Lossiemouth in about twenty fathoms, 1852.

Long-clawed Lobster, *Munida Rondeletii*. Rare. "Pennant received it from Banffshire," on the Moray Firth, "and hence named it *Astacus Bamfficus*." It has, since Pennant's day, been occasionally found in other parts of the Firth. A beautiful specimen from Gamrie is in the Elgin Museum, presented by Mr. Harris.

Mud-borrower, *Callianassa subterranea*. From the number of specimens found, more or less mutilated, in the haddock, it appears that "this remarkable species" is not rare in some of the fishing-grounds of the Moray Firth.

Mud-borer, *Gebia stellata*.

————— *G. deltura*.

Both these species or varieties have been occasionally met with: the latter seems to be more frequent than the former.

McAndrew's Calocaris, *Calocaris Macandræ*. Although one of the most recent and interesting additions to the British Fauna, this singular Crustacean does not appear to be very rare, as a good many specimens, of course in rather an imperfect condition, have been obtained from the stomach of the haddock.

Lobster, *Homarus vulgaris*. This well-known and highly prized "shell-fish" is asserted by the older fishermen to be much scarcer on the coast than was wont to be the case in their earlier days. They affirm that their numbers have never recovered the spoliation which the Elginshire rocky headlands of Covesea and Stotfield suffered some fifty years ago, from a party of English fishermen sent down to supply the London market. Surely, after such a lapse of time, the numbers of the lobster must have been renewed, as would likely be proved to be the case, were like successful means of capture employed here as at other and more southern fishing-stations.

Norway Lobster, *Nephros Norvegicus*. A most elegant species, by no means uncommon in the Moray Firth. Well known to the fishermen as the "red lobster," and when drawn up by their lines, it is generally retained and brought ashore.

Common Shrimp, *Crangon vulgaris*. Abundant on all parts of the coast, and also in the brackish waters of estuaries. Fished for by an amateur occasionally; never sought after for the market.

Spiny Shrimp, *Crangon spinosus*. Rare: a few have been met with.

Bell's Shrimp, *Crangon sculptus*. Not uncommon.

Risso's Shrimp, *Nika edulis*. Not rare in the Moray Firth.

Montagu's Shrimp, *Athanas nitescens*. Three specimens have been obtained.

Sowerby's Shrimp, *Hippolyte spinus*.

Leach's Shrimp, *Hippolyte varians*.

Only one specimen of each of these species has been found.

Ring-horned Shrimp, *Pandalus annulicornis*. Frequent in the Firth. Dredged five miles north of Lossiemouth, August, 1852.

Some rather imperfect specimens hold out the prospect of at least one other species of *Pandalus* being in this district.

Cuma trispinosa.

Alauna rostrata.

Neither of these two species, particularly the latter, seems to be very rare.

Thompson's Opossum Shrimp, *Mysis Chamæleon*. Findhorn Bay, where it has been frequently met with amongst myriads of the following species.

Common Opossum Shrimp, *Mysis vulgaris*. In the autumn months a continuous line of this species, miles in length, may be seen skirting the Bay of Findhorn and the canal of the Loch of Spynie.

It has been chiefly by the assistance of Bell's 'History of British Crustacea' that the species of the above list have been determined and arranged. This work has but one fault, but that, to the student of British Natural History, a most grievous one, — the slow rate at which it has been issued from the press. The eighth number, completing the Podophthalmous Crustacea, is but just published, eight years having elapsed since the first number appeared. It must however be readily confessed, that although it is thus but slowly appearing, its high value as a guide goes far, as each fresh number comes to hand, to compensate the anxieties caused by the delay. And now, as the light from this guide is for a season at least withheld, to lead one's way among them, the Edriophthalmous Crustacean forms hitherto collected from the waters and shores of the Moray Firth, appear a somewhat dark, forbidding, and unmanageable crowd, in which only the more marked species have been identified with the descriptions given in the third volume of Milne-Edwards's work, or in some papers, by various authors, published in 'Jameson's Journal' and in the 'Annals

of Natural History.' Suffice it then for the present to give the following, in the order and with the names assigned to them in White's 'Catalogue of British Crustacea.'

The Common Sand-hopper, and Shore-jumper, *Talitrus Locusta* and *Orchestia littorea*, are to be met with in great abundance upon the sandy beaches, at and above high-water mark, by hastily removing the masses of half-sunken half-decayed débris thrown up by the tide.

The Common Coast-screw, *Gammarus Locusta*, is everywhere to be found about the sea margin and brackish water, and is well known under the provincial name of "Sea-louse." Other species of this, or of nearly allied genera, have been observed about the Firth.

The Long-horned Mud-liver, *Corophium longicorne*, swarms in the brackish waters of the canal of the Loch of Spynie and of the Bay of Findhorn. The eastern banks of this Bay have often a white line, like drifted snow, formed on them almost entirely of the cases or outer skeletons of this singular-looking species.

Hyperia Latreillii. Bay of Findhorn, August, 1852. Some small Crustaceans, collected from two large Medusæ, most probably belong to this species. There were many other smaller Medusæ lying on the same part of the beach, and differing only in size from the two to which the parasite seemed confined. Here the parasite was of a higher grade in the scale than the animal on which it lived.

Muller's Spectre Shrimp, *Proto pedata*. From its frequent occurrence as part of the food of the haddock, the spectre shrimp seems to be abundant in the fishing-grounds of the Firth.

Sowerby's Arcturus, *Arcturus longicornis*, and Goodsir's Arcturus, *A. gracilis*, are also abundant.

Some forms of *Idotea* have been collected ; but to which species they belong has yet to be determined.

The Boring Limnoria, *Limnoria terebrans*, so destructive to timber, is not rare in this northern arm of the sea, but is found both in the fixed and floating pieces of wood.

The Common Land Slater, *Oniscus Asellus*, "Sklaters," is the only inland Crustacean that has yet been met with in this district, and compared with the scientific descriptions in systematic works.

Cranch's Fish-louse, *Cirolana Cranchii*, is occasionally found as a parasite on the cod. The numbers of this species that have been seen in the stomach of the haddock, show that it is not rare.

The Nebalia, *Nebalia bipes*. Only two or three specimens have been obtained : but its minuteness may account for its seeming rarity.

The Branched Water-flea, *Daphnia Pulex*, and the Satyr, or Fresh-water Flea, *Cyclops quadricornis*, are to be found in multitudes in lochs, ponds, and such-like localities.

The Salmon Fish-louse, *Lepeophtheirus Strœmii*, the "Sea-louse" of our fresh-water anglers, is well known as parasitic on the salmon and its allies, and is looked upon as a good test of their not only being newly run from the sea, but also in the best condition for the table.

The Transparent Fish-louse, *Caligus diaphanus*. Two males and several females (?) from a cod-fish, Lossiemouth, August, 1852. Very opposite to that of the amateur, when he finds the sea-louse upon his silvery captive, is the opinion of professional fishermen when they see this species abounding on the cod-fish. They regard it as an index of leanness, lankness, if not of disease.

Pycnogonon littorale is not unfrequent along the coast, as at Cove-sea, Stotfield, &c.

One of the species of *Nymphon* has also been seen at Cove-sea. Specimens of all the others being preserved, this last-named Crustacean is the only one in the list for the existence of which in the Moray Firth no more than oral proof can be given at present. At least two specimens were observed, but, being then looked upon as spiders that had been blown from the land, they were neglected and lost.

G. GORDON.

Birnie, by Elgin, November, 1852.

Entomological Localities. By J. W. DOUGLAS, Esq.

(Continued from page 3588).

THE COAST.

"Where is the life that late I led, say they :
Why, here it is ; Welcome these pleasant days."

King Henry IV.

"My Lord Melun, let this be copied out,
And keep it safe for our remembrance :
Return the precedent to these lords again,
That, having our fair order written down
Both they, and we, perusing o'er these notes
May know."

King John.

To one like myself, born inland, the idea of the sea has a charm which those to whom the ocean has always been a familiar object can

never fully realize; and as soon as I was free to roam at will, my first expedition was to the coast. Then all my imaginings of greatness and beauty, were absorbed in the sense of vastness and grandeur impressed upon me by the ocean; and the thought of the omnipotence of its Creator and a love for his works, with a corresponding appreciation of the littleness of man and his doings, became fixed in my soul. I thanked God I was a native of the land,

"Clipped in with the sea

That chides the banks of England, Scotland, Wales,"

because, above all things else, this pleasure of seeing the great sea could always be easily acquired.

Each year, as summer advances, it is the fashion for every citizen that is at all "respectable," to go to the sea-side. It is no doubt a salutary thing for the multitude who have for twelve months been immersed in the cares of "how to live," to wash and be clean;—to clear out the "perilous stuff" from their brains;—to gain a few weeks' respite from their toil and trouble, and have the opportunity of thinking wherefore they live, and why all the bounty of Nature to which they have been strangers is spread out and continually renewed. Pity is it, as all our sea-side resorts too plainly show, that when the man of business does come out of his chrysalis, from his total ignorance of Nature's productions, he has no proper appreciation or enjoyment thereof; and so the frivolities of town life are imported to the coast, to enable him to kill the time which, in the absence of his grub-like avocations, hangs so heavily on his hands. If our population had but an initiation into Natural History, then every year, when the multitude returned to their homes, what a number of discoveries would they bring back, which, if not positively new to science, would be of the highest interest and use for their own instruction!

I fear this is a trite subject, but it is one on which I am earnest. Only the other day, I saw an old gentleman who, from his youth, had held for his motto "Business must be attended to;" and he was an example of the great class that attends to nothing else. But from long-continued exclusive devotion to business his health had latterly failed; so he consulted a physician, who, among other questions, asked his age. "Sixty," was the reply. "So you think," said the doctor, "but you are really seventy-five, and I can give you little hope of relief." And so he, like thousands of others, will "die, and make no sign" that he ever knew anything of the glories surrounding him, the investigation of which would have afforded intense happiness, and doubtless have lengthened his existence.

With such an extent and variety of sea-board as Great Britain possesses, forming the habitat of a Flora corresponding in diversity, I presumed long ago that there would be a Fauna of insects unknown inland, and have never ceased to urge the examination of our coasts; and every year's experience tends to confirm the impression that this is the field on which the laurels of our collectors are to be acquired. The greater part of the recent additions to our lists is composed of captures made by the sea-side, and such success should stimulate us to devote more time to a careful examination thereof. Mr. Wollaston (Zool. 3616) speaks disparagingly of the coasts of Devon and Cornwall, as far as regards Coleoptera, and on this Order there is no better authority; but no one has hunted there for Lepidoptera or other Orders, as he has for his favourites; and it may be that some new or rare species are waiting for the keen eye of a collector who knows how to seek them. There is a great deal more in such knowledge than is generally believed, although I grant a lucky chance or felicitous combination of circumstances may do more for a collector than the greatest acumen or industry without them. But such adventitious aids may happen to a collector of the right stamp, as well as to one of the negative character: the one first requisite is to be on the spot. I wish therefore to impress upon all who go to the sea-side, the certainty that there are daily within their reach species that would gladden the eyes of many besides themselves, if they will only *work* for them. Many species already found on the coast are unknown to the Continent, and it cannot, but be supposed that several other new things are yet undetected. The eastern and southern coasts seem the most prolific, but that may be because they have been most frequented, and no place should be given up until it has been tried at all seasons. If no perfect insects are found, yet larvæ, particularly those of Micro-Lepidoptera, may be discovered, and the light-houses will well repay frequent visits for the Noctuæ and Geometræ attracted to them.

The following is a select list of species which have almost exclusively been taken on the coast in various parts.

Pieris Daplidice	Mamestra albicolon
Pamphila Actæon	„ abjecta
Chærocampa Celerio	Spælotis præcox
„ Nerii	„ cataleuca
Deilephila Euphorbiæ	Agrotis lunigera
Lithosia pygmæola	„ obelisca
Lasiocampa Trifolii	„ Ripæ
Leucania littoralis	Heliophobus hispida

Eremobia ochroleuca
Epunda lichenea
Hadena assimilis
Cucullia Absinthii
Aporophila australis
Plusia orichalcea
Ophiodes lunaris
Rhodaria sanguinalis
Odontia dentalis
Mecyna asinalis
Phorodesma smaragdaria
Ennomos Alniaria
Aspilates citraria
Nyssia zonaria
Emmelesia bifasciata
Eupithecia ultimaria
Acidalia perocharia
 " *rubricata*
 " *degeneraria*
Timandra emutaria
Ænectra Pilleriana
Peronea permutana
Sericoris littorana
Orthotænia Trifoliana
Sciaphila conspersana
 " *cretaceana, Curtis*
Stigmonota Leplastriana
Catoptria Wimmerana
 " *citrana*
 " *pupillana*
Eupœcilia affinitana
Cochylis gigantana
Chilo cicatricellus
Crambus pedrioellus

Eudorea Portlandica
 " *lineolea*
Anerastia Farrella
Homæosoma nimbella
Myelois Cribrum
Missoblaptes bipunctanus
Gymnancyla canella
Ypsolophus Durdhamellus
Cecophora deauratella
Depressaria pallorella
 " *nanatella*
 " *caprella*
 " *rotundella*
 " *depressana*
 " *Douglasella*
Gelechia vilella
 " *instabilella*
 " *temerella (pernigrella)*
 " *desertella*
 " *obsoletella*
 " *vicinella*
 " *celerella*
 " *marmorea*
 " *pictella*
 " *mundella*
 " *littorella*
 " *inopella*
 " *paupella*
 " *Carlinella*
 " *neuropterella*
Bucculatrix maritima
Elachista propinquella
Pterophorus brachydactylus

J. W. DOUGLAS.

6, Kingswood Place, Lee, Kent,
 October 25, 1862.

Some Account of a Petrel, killed at Southacre, Norfolk; with a Description and Synonymy. By ALFRED NEWTON, Esq.

THE bird represented in the engraving at page 3693, was observed by a boy on a heath at Southacre, near Swaffham in Norfolk, flapping for some time from one furze-bush to another; at length it got into one of the bushes, and was then secured by him: exhausted as it was, it had strength enough remaining to bite violently the hand of its captor, who thereupon killed it. Mr. Newcome, of Hockwold Hall, near Brandon, fortunately happened at the time to be kawking in the neighbourhood of Swaffham, and his falconer, John Madden, observing the boy with the dead bird, procured it from him and brought it to his master, by whom it was skinned and mounted, and in whose possession it now is. This took place in March or April, 1850. In my ignorance of the appearance of the fulmar in its immature stage of plumage, and my unwillingness to consider that a wonder had been met with, I considered the subject of this paper to be a specimen of the young of that bird; but happening shortly after to see an individual of that species, I at once perceived the error I had fallen into, but by that time the bird had been inclosed in a case with others, and Mr. Newcome was unwilling to take it out in order to submit it to the inspection of competent judges. However, in May last, that gentleman was prevailed upon to send it to Mr. Yarrell, who not only at once saw that it was new to the British Fauna, but was unable to identify it with any described species. Mr. Gould, also, who inspected it at Mr. Yarrell's house, was equally undecided as to whether or not it had been described, but recognized it as a species he had seen on the wing in crossing the Atlantic. Being in London in July last, I thought I discovered a strong likeness between a stuffed specimen then in the Museum of the Zoological Society and Mr. Newcome's bird; on my return into Suffolk, therefore, I obtained this latter individual, and forwarded a sketch of it to Mr. Bartlett, accompanied by a request that he would inform me whether the two examples appeared to him to belong to the same species. After some delay, arising from the fact that in the interval the specimen I had noticed had been transferred by the Zoological Society to the British Museum, Mr. Bartlett, on the 7th of September, returned me an answer in the affirmative; further stating that the species had been figured in No. 416 of the 'Planches Coloriées,' under the name of *Procel-laria hasitata*; and also, what appeared to him rather singular (for I

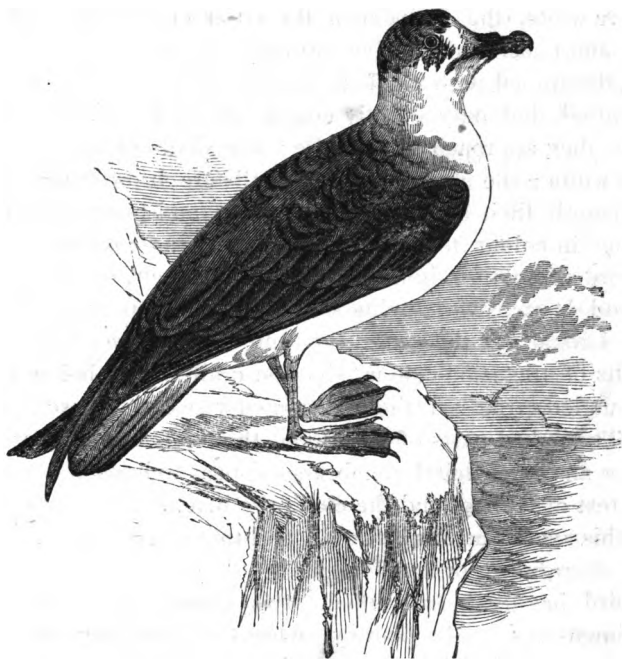
had acquainted him with Mr. Gould's opinion), that Mr. Gould himself had described the identical specimen, in a paper read before the Society, as *Procellaria rubritarsi*, but that no reference to this paper could be found in the Society's published 'Proceedings.'

Mr. Yarrell, a few days after, announced to me that he had independently made the same discovery, telling me that in the letter-press to the 'Planches Coloriées' two specimens are referred to, — one, the subject of the portrait, which was captured in the South Seas, the other, in the Museum of the Netherlands, which came from the Indian Ocean. Mr. Yarrell also further said, that the specimen now in the British Museum had been presented to the Zoological Society by the late John Hearne, Esq., and came from Hayti, that its wooden block-stand was marked "*rubritarsi*," and that its tarsi were painted red.

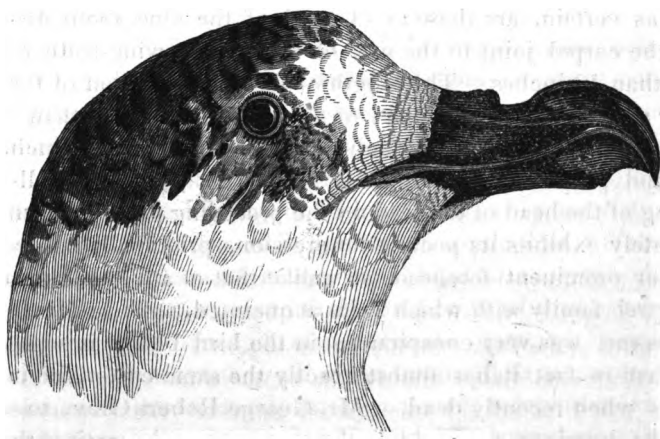
Having thus got upon the right track, I wrote to Mr. Gould, and the following extracts from his letters in answer to my inquiries, will be, I am sure, read with interest, as affording us the means of conjecturing the range of this species. Mr. Gould says:—"The petrel you write about is the same as that to which I gave the name of '*rubritarsi*,' but as that name was never published, of course no notice can be taken of it. * * I saw your bird in abundance off the Western Islands, and I have little doubt but that it breeds and finds a home in the West Indies, as I have seen specimens in France stated to have been brought from thence, besides which, Mr. Hearne's bird in the Museum of the Zoological Society was from Hayti. I have never seen it from the Indian Seas, and I think Temminck must have been misinformed as to that being its native locality." "The name '*rubritarsi*' was doubtless proposed under the belief that the red paint on Mr. Hearne's specimen was intended to represent the natural colouring; but my opinion, after having seen so many of the petrels alive, now is that they were flesh-colour."

The following is a description of the individual bird whose capture in Norfolk I have above described. The whole of the beak is black: from the crown of the head to the nape of the neck the feathers are white at the base, broadly tipped with dark brown, so as to present, except at the edges of the patch, which is nearly circular, a uniform surface of the latter colour; in front of and below the eye are a few grayish black feathers extending over the ear-coverts; the orbits are surrounded with a ring of sepia-brown feathers. The forehead, face, neck, breast, belly, sides, and under tail-coverts are nearly pure white (the departure from that colour being probably only occasioned by the stain of the oil ejected by birds of this genus when captured), but there are also a

few dark feathers on the flanks. The back and shoulders are covered



The Capped Petrel (*Procellaria hesitata*), one-sixteenth of the natural size.



Head of the Capped Petrel, (natural size).

with brownish gray and blackish brown feathers, the former appearing to have been but lately assumed, but many of the latter are "sedgey"

and worn at the edges : all these feathers are white at the base, but that colour does not show on the surface. The rump and upper tail-coverts are white, the feathers of the latter elongated. The tail is rounded, and consists of twelve feathers, the outer pair white, edged and broadly tipped with blackish brown, the next four pair are similarly coloured, but only slightly edged, the tips of each pair being darker as they approach the middle ; the shafts of the quills in all these are white : the middle pair of quills are brownish black nearly all their length, their basal part being white, and have their shafts corresponding in colour to their webs. The wing-coverts are blackish brown, bordered with a lighter shade of that colour, the borders of the middle and lower coverts being so broad as to appear like two light-coloured bars across the wing ; the quill-feathers are blackish brown, with shafts of the same colour, the first quill-feather being the longest ; the under surface of the wings, as far as can be ascertained, is white. The naked parts of the tibiae, the tarsi, and the basal halves of the toes and interdigital membranes appear to have been dusky yellow, the rest of the feet and the claws are black. Mr. Newcome tells me that this specimen was a female, and that when fresh killed its irides were deep brown or hazel colour.

The bird having been stuffed, it is difficult to ascertain some of its dimensions. Mr. Gurney, who took considerable pains to measure correctly its whole length, informed me that it must have been about 16 inches. Some of the measurements, which may be taken as certain, are these : — Length of the ulna about $4\frac{1}{2}$ inches ; from the carpal joint to the end of the longest wing-feather is rather more than 12 inches. The length of the naked portion of the tibia is rather more than half an inch ; of the tarsus rather less than $1\frac{1}{2}$ inch ; and of the middle toe, excluding the claw, about $1\frac{1}{2}$ inch. The form and proportions of the beak are well shown in the full-size engraving of the head of the bird on the preceding page, and which also accurately exhibits its peculiar expression, principally caused by the singular prominent forehead, so unlike that of any other members of the petrel family with which I am acquainted. This, Mr. Newcome assures me, was very conspicuous in the bird before it was skinned, and that in fact it has almost exactly the same cast of countenance now as when recently dead. Mr. George Robert Gray, to whom I sent the drawings from which the engravings illustrating this paper were taken, with a request that he would inform me whether they represented the bird as differing from the specimen which belonged to the Zoological Society, or from the figure in the 'Planches Coloriées,'

tells me that "the crest is not exhibited in Temminck's figure, nor in the specimen. There is less black on the top of the head in the figure than is given in your drawing, which causes one to suppose that the figure was taken from a more adult example. The specimen from the Society also differs from the drawing sent—the black on the forehead advances to the base of the nostrils, and the black on the hind head extends further down the nape. These variations may prove that the Museum's specimen is rather younger than the example taken in Norfolk. In all other respects they agree." Mr. Yarrell considers Mr. Newcome's bird as decidedly adult.

The species under consideration is without doubt comprehended in the genus *Procellaria*, as at present restricted by most ornithologists. In the general appearance of its plumage it is, however, not unlike adult specimens of our greater shearwater (*Puffinus major*, Faber), and it is, I think, within the range of possibility, that it might have been mistaken by a hurried observer for that bird. I need hardly say that a moment's consideration of the generic differences of the two species would be enough to dispel any doubt that might arise on the subject.

I now proceed to the bibliographical part of this bird's history: and here I should be at a considerable loss, were it not that I have received assistance from Mr. Gurney, Mr. Yarrell, and finally from Mr. G. R. Gray. The two gentlemen first named have most kindly favoured me with the following extract from the letter-press to the fourth volume of the 'Planches Coloriées,' (70me livraison).

"Pétrel hasite.

"*Procellaria hasitata*, Temm.

"L'adulte. (Planche 416).

"La collection des desseins d'oiseaux du célèbre Forster, renferme, sous les numéros 97 et 98, des figures assez exactes de ce Pétrel, indiqué sous les noms de *Hasita* et *Leucocephala*; nous en publions le portrait sur un sujet capturé dans les Mers Australes."

"La queue longue—conique—bec d'un noir parfait, tarse, base des doigts et des membranes jaunes—le reste, aussi que les ongles, noir—longueur treize pouces. Une plaque circulaire noire couvre le sommet de la tête et une tache noire s'étend sur la moitié postérieure du lorum—le reste de cette partie, le front, les sourcils, les joues, le cou, et généralement toutes les parties inférieures, d'un blanc pur, le dos, le croupion, les ailes et la queue d'un noir-brun, les plumes du manteau bordées d'un brun cendré, les longues plumes des couvertures de la queue d'un blanc pur."

"Le sujet du Musée des Pays-Bas vient des Mers de l'Inde." *

To Mr. Yarrell's surprise, on inspecting Forster's original drawings in the British Museum, he "found that neither of the numbers referred to was the petrel in question. Forster's No. 97 was the *Procellaria mollis* of Gould, but called *hæsitata*; and No. 98 was the *P. Lessonii* of Garnot, and called *leucocephala*." How M. Temminck could have made this mistake, Mr. Yarrell says he cannot conjecture, but that he has done so does not appear to admit of a doubt. The whole matter of the nomenclature of the species to which Mr. Newcome's bird belongs, is involved in the greatest confusion; chiefly arising from the fact that the name "*hasitata*" (or, in its correct form, *hæsitata*) which M. Temminck applies to it, has by one author or another been ascribed to no less than four different species of *Procellaria*. Thanks to Mr. G. R. Gray, I am enabled to give a synopsis of some of the synonyms of these four species, which, although not perhaps dispelling all the clouds of confusion which surround the subject, yet cannot fail to render them more penetrable. Mr. Gray's list is nearly as follows:—

"1. *Procellaria hasitata*, Kuhl, *Beitr. zur Zool.* (1820), p. 142.

Temm. Pl. Col. 416.

"M. Temminck purchased his specimen from the collection of Bulluck,' Kuhl." †

"2. *Procellaria hæsitata*, *Forst. Icon. ined.* 97.

„ *hasitata* (part), Kuhl, *Temm.*

„ *inexpectata*, *Forst. Descr. Anim. by Licht.* (1844),
p. 204.

„ *mollis*, *Gould, B. of Austr. pl.* ‡

* To the Rev. Alfred Charles Smith I am indebted for the information that a nearly literal translation of the above passage is given in the 'Encyclopædia Metropolitana' (xxiii. 592). The bird is there called "*P. hasitata*, *Tem.*: White-headed Petrel, *Forst.*:" and is the twenty-third and last species enumerated. The latter name bestowed upon it is that generally applied to another species with which it was doubtless confounded by the writer. The passage, with a copy of which Mr. Smith has favoured me, contains nothing else that is not given in the French version, while one or two important points are omitted, and as the work from which it is extracted is easily accessible to all, I do not think it worth while to transcribe it here; but on that account I am not the less obliged to Mr. Smith, to whom I offer my very best thanks for his ready kindness in sending it to me.

† This is the species to which belongs the subject of this paper.

‡ Soft-plumaged Petrel, *Gould*. Black-toed Petrel, *List of B. in Brit. Mus. Coll.* (1844), pt. iii. p. 164. This species differs from the former in being a smaller and much less powerfully made bird; in it the dark colour extends down the nape and partly over the sides of the neck, forming a faint band across the chest.

- "3. *Procellaria cinerea*, *Gmel. Syst. Nat.*
 „ *inexpectata*, *Forst. Icon. ined.* 92.
 „ *melanura*, *Bonn. Encyc. Méth.*
 „ *hæsitata*, *Forst. Descr. Anim. by Licht.* (1844),
 p. 208.
 „ *puffinus*, *Less.*
 „ *hæsitata*, *Gould, B. of Austr. pl.*"
- "This is the type of '*Priofinus*' of *Hombrohn and Jacquemont*."*
- "4. *Procellaria leucocephala*, *Forst. Icon. ined.* 98.
 „ *hasitata* (part), *Kuhl, Temm.*
 „ *Lessonii*, *Garn. Ann. des Sci. Nat.* vii. t. 4.
 „ *leucocephala*, *Forst. Descr. Anim. by Licht.* *p.* 206.
 „ *Lessonii*, *Gould, B. of Austr. pl.*
 „ *alba*, *Gmel.' Licht.*"†

With regard to the specific name by which this petrel should be distinguished, Mr. G. R. Gray has expressed to me his opinion that it is the species to which that of "*hæsitata*" (being the corrected form of *hasitata* applied to it by Dr. Kuhl in the year 1820) rightly belongs; for although Dr. Kuhl imagined, as did M. Temminck in the extract I have before quoted, that he was describing the subject of Forster's drawing, No. 97, he in reality has given the characteristics of a bird similar to the subject of this paper: and as the names on Forster's drawings were not published until 1844, Dr. Kuhl's is the earliest publication of the name. If from the single example whose capture is here recorded, the *Procellaria hæsitata* of Kuhl is to be included in the list of British birds, it is evident that it must have an English appellation. The ordinary rule that the scientific one should be literally translated, cannot, I think, be applied in this case, nor will it do to take the hint afforded in the French name applied by M. Temminck, and coin a meaningless word for the occasion. I should be inclined to call the bird the "Capped Petrel," were it not that it appears, as far as can be ascertained from the two specimens, and the representation of a third, which has been compared on this occasion, that as the bird increases in age, the "cap" grows less, and in very

* Great Gray Petrel, *Gould. Cinereous Petrel, List of B. in Brit. Mus. Coll.* (1844), *pt.* iii. *p.* 159. Mr. G. R. Gray, in the last passage referred to, makes this bird a shearwater, (*Puffinus*).

† White-headed Petrel, *Gould. Lesson's Petrel, List of B. in Brit. Mus. Coll.* (1844), *p.* iii. *pt.* 163. A species much resembling the new British bird in form and stature, but with a perfectly white head and tail.

old specimens *may* entirely disappear; if, however, the "cap" be permanent, I do not think the name would be inappropriate.

I ought perhaps, before this time, to have rendered my acknowledgments, in a more systematic manner than I have hitherto done, to those distinguished naturalists who have assisted me in drawing up this paper; for I fear that its great length may perhaps tire some of its readers before they find out that I am quite aware that little if any of the merit it may possess is due to me; but to interrupt, by any expressions which might be deferred, a narrative, as it is already too obscure, is not the way to make it clearer. Nothing that I can say can add to the reputation which those gentlemen now possess, but I am bound to return my very best thanks to Mr. Bartlett, Mr. Gould, Mr. G. R. Gray, Mr. Gurney, and Mr. Yarrell, for the kind and able manner in which they have guided me through (to use the happy expression of the latter author) "a field of search which is almost as wide as the range of the petrels themselves." Last, though not least, my thanks are due to my friend Mr. Newcome, who placed the bird in my hands for the purpose of describing it here.

Time will show what manner of an addition to British Ornithology *Procellaria hæsitata* may be: — whether a storm-driven straggler (as probably Mr. Newcome's specimen was); — or one of those visitants to which, in our ignorance of the causes of their wandering, we apply the name of "accidental;" — or again, a species of rare but periodical occurrence: and considering its Atlantic range, and the possibility of its being taken for a British bird, the appearance of which is by no means generally well known, this last does not seem to me improbable. But the subject once mentioned in the 'Zoologist,' may safely be left in the hands of its readers; and imperfect as I know this paper to be, I only trust it may excite them still more to pay attention to these interesting works of creation, which are to be found even if we "take the wings of the morning, and dwell in the uttermost parts of the sea."

ALFRED NEWTON.

Elveden, November 13, 1852.

Observations on the Economy of Vespa Norwegica and V. rufa.

By FREDERICK SMITH, Esq., Assistant in the Zoological Department, British Museum.

ONE of the principal entomological objects which I had in view during a recent excursion in Yorkshire, was to obtain nests of the tree wasp (*Vespa Norwegica*), and I was fortunately successful in meeting with one, attached to a gooseberry-bush: this, as well as a nest of *V. rufa*, I brought to London, and established both colonies in my private sitting-room, thus gaining an opportunity of observing several particulars connected with their economy, which I now purpose to give in detail.

In order to make observations on these insects, it is necessary to establish a working community; and as at first sight this might appear to be attended with some difficulty and danger, I may as well relate by what means I obtained possession of my nests, as well as their inhabitants. Meeting with a nest of *Vespa rufa* in a bank, I determined to obtain possession of it for observation. The communities of this species are not so numerous as those of *V. vulgaris*. As nearly as I could ascertain, the nest referred to had about 150 inhabitants, consisting of one female and about half a dozen recently developed males, the rest being working wasps. The first thing to be done in taking a nest, is to strike terror into the whole community; this is effected by placing a bag-net over the entrance, and then beating the ground until the whole population is in disordered commotion. A large number will rush into the net, and these, by swinging it round several times, may all be secured at the bottom: you may then dig with little danger; the wasps crawling about panic-struck. On digging out the nest, it must be placed in the upper part of the net, and left exposed for a short time, until the stragglers are assembled, when the net must be closed. I obtained my nest without any attempt on the part of the wasps to sting, and deposited the community safely in a small deal box. The nest of *V. Norwegica* was very easily taken at night, by inclosing it in a bag and cutting off the branch.

On arriving at home, I made an opening in the box, so as to allow of egress and ingress, and placed it at an open window; I also supplied the wasps with sugar and water, upon which they regaled themselves with much apparent enjoyment. The nest of *V. rufa* contained only four combs: the upper comb consisted entirely of worker-cells; its length was 4 inches and its breadth 2: the second was a little

larger, and consisted also of worker-cells: the third comb, in the centre was occupied with cells of males, whilst those towards its sides were rather larger, and contained females: below this comb was another, just commenced, and consisting of worker-cells alone. On giving the wasps their liberty, many of them, after visiting the dissolved sugar, re-entered the nest, and hurried over the cells of the males and females to those of the workers, which latter they fed very assiduously; but I observed that it was only those wasps which had flown to a distance that fed the male and female grubs. To satisfy myself more fully on this point, I closed the entrance when all the wasps were in the nest at night, and placing sugar and water in the box, I watched with great attention all their proceedings; still, none fed the males and females, but continued their attention to the workers. On again giving them their liberty, I found as before that those wasps alone fed the males and females which had flown to a distance in search of a more suitable nourishment. This will, I think, account for the habit of wasps in killing other insects, and at times collecting animal juices, such being, in all probability, the suitable nutriment for grubs of the males and females.

When the grubs are fully fed, they spin or rather line the cell with a thin silken covering, closing the top with one of a much thicker consistency. These shrouds, in which the grubs are inclosed, are easily extracted from the cells of *V. Norwegica*, being in them much thicker than in those of *V. rufa*, and of a nearly uniform thickness throughout; those of the latter are extremely thin and delicate below the cap of the cell, which, however, is continued of the same thickness for about a quarter of an inch within the cell. I frequently watched the grubs while constructing the caps of the cells, which appears to be a process effected in a few hours.

I have stated above that the nest of *V. rufa* contained four combs; the cells in the fourth were in progress, not being more than from one to two eighths of an inch deep: each contained either an egg or a minute larva, so that in the first instance, or at the commencement of a colony, time is saved by these means, the building of the cells progressing with the growth of the larvæ. And this alone can be the object, as immediately on a wasp emerging from its cocoon, the workers first chip off with their mandibles the remains of the cell-cap, and then clean out the cell for the occupation of another inhabitant.

In the construction of their cells the tree-wasps may be regarded as card-board makers, and the ground-wasps — *V. rufa*, *V. Germanica*, and *V. vulgaris* — as paper-makers. The cells of the tree-wasps are

exceedingly tough, and are with difficulty broken asunder; whilst those of the last-mentioned species are of a delicate texture, and in some instances, when the wasps have used decayed wood in their construction, they will scarcely bear the touch.

The community of *V. Norwegica* which I obtained, consisted of about 100 females and 150 workers, but not more than twenty males; the latter sex having left the nest during the hot weather in July, and had not returned at night.*

The species to which I have applied the name *Norwegica*, is identical with the *Vespa Britannica* of Leach. The name was first used by Fabricius in his '*Entomologia Systematica*;' and we subsequently learn, on turning to his '*Systema Piezatorum*,' that the sex described is a worker or neuter wasp, as reference is there made to Panzer's '*Fauna Germanica*,' 81, tab. 16, which correctly represents that sex. And this is further established by the fact, that only this sex and the male have the rufous macula on each side of the second segment of the abdomen; and although, in the majority of instances, the scutellum has a minute spot on each side in the workers, still others are without them, and they are easily overlooked. This tree-wasp has been returned to me with the name *Norwegica* by every continental entomologist to whom I have submitted it, and I feel satisfied that our insect is identical. None of the females which I bred, or others which I have seen, have a rufous macula at the sides of the second abdominal segment; which is a still further proof that the specimen described by Fabricius was a neuter.

During the present season I found a nest of *Vespa vulgaris*, the first comb of which was in progress; only seven workers had been developed; four cells were closed, the rest of the cells having either eggs, or larvæ in different stages of progress. The number of complete cells was twenty; those from which the workers had emerged were already cleaned out, and each contained an egg, which was attached at one of the angles about one-third within the depth of the cell. The cells in progress nearly all contained eggs or larvæ; indeed, except four or five which were scarcely raised above their foundations, all were occupied.

It has been stated by some naturalists, that the nursing wasps close in the cells of full-fed larvæ. I can only suppose this error to have originated in mistaken observation; and that instead of their closing in full-fed larvæ, they were occupied in rendering assistance to

* Mr. Foxcroft, the collector, captured male wasps in the night, at sugar used to attract *Lepidoptera*.

the perfectly developed insects in making their exit from the cells, this being an office in which I have frequently seen them engaged. After the development of the perfect wasp, it remains some days in the nest before it ventures abroad; indeed, on its first coming forth it has not its proper colouring, many of the workers of *Vespa rufa* on their first issue having scarcely a trace of their future markings upon the abdomen.

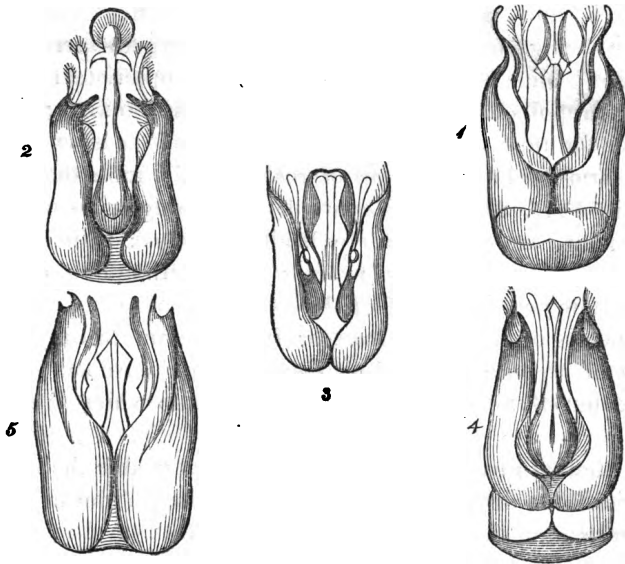
In everything connected with the economy of insects there is a wise purpose: and could we on all occasions become acquainted with their economy, many things at present unaccountable would prove additional evidences of the power, wisdom, and goodness of the Creator. I have previously stated that the caps are much thicker than the lining of the cells, or rather shrouds of the larvæ, indeed the caps are of so tough a consistency, that a considerable pressure may be used without injury to them. The purpose of this is at once obvious on watching the occupations of wasps. It will be seen that the development of the inhabitants of the cells contained in one comb must of necessity take place in successive degrees; consequently there will be at all times a number of larvæ requiring food in different parts of the same comb, so that a constant traversing over the combs takes place; indeed, this is so unceasing, that were not the caps of the cells of a firm consistency, the delicate pupæ must perish from the injuries to which they would be subjected from the working wasps.

I did not on any occasion observe the male wasps feeding the young brood, but I have seen them carry out the cuttings from the cell-caps and other refuse. The females are fed by the workers, the latter disgorge the honey &c. which they collect, and it is then devoured by the females. I observed several females in the act of depositing eggs, and feel assured that some of those which first arrive at maturity, are parents of the great autumnal brood.

It has been observed that wasps are subject to the attacks of parasites; *Ripiphorus paradoxus*, various Diptera, and some species of Ichneumonidæ being amongst the number.

From the nest of *Vespa rufa* I obtained several specimens of *Chrysis ignita*, and some of an Ichneumon, belonging to the genus *Bassus*. From one of *V. vulgaris* a number of *Volucella bombylans* made their appearance. I obtained no parasite from the nest of *Vespa Norwegica*; but I would observe, in concluding my observations, that the sexes of this species do not appear to be subject to much variation in colour or markings, the female only varies in having occasionally a minute yellow spot on each side of the scutellum; the

worker also varies in being destitute of the lateral rufous spot on the second abdominal segment, this occurs only in one in thirty or forty individuals. The sex that varies most is the male, which is frequently without the rufous spots, and the black bands vary much in width, the segments frequently having an extremely narrow black apical margin.



1. Sexual organs of the male of *Vespa Germanica*.

2. Ditto of *V. vulgaris*.

3. Ditto of *V. rufa*.

4. Ditto of *V. sylvestris (holistica, Fab.)*

5. Ditto of *V. Norwegica*.

As many erroneous statements have appeared with regard to the distinction of the species,* at one time a distinct species having been ranked as a variety, at another, all having been conjectured to be probably varieties of one species, I have made careful delineations of the sexual organs of all the males, except those of *Vespa Crabro* and *V. arboreus*, the first being undoubtedly distinct from all the others, and the male of the latter I do not know : these figures will, I hope, satisfactorily prove the distinctness of five of our British Vespidae.

FREDERICK SMITH.

October, 1852.

* See Zool. i. 161.

Notes on the Coleoptera of Whittlesea Mere. By the Rev. HAMLET CLARK, M.A., Curate of All Saints, Northampton.

THE name of Whittlesea Mere has long been to the entomologist a household word, suggestive of many of our most rare and beautiful insects: it is now, alas! only a name; where once it was, farm-houses are being erected, and crops are being gathered in. The "willow-tree," once the land-mark to the coleopterist, as indicating the metropolis of entomological rarities, still exists; but only as a shelter for turkeys, and the other feathered accessories to the adjoining farm-yard: the clumps of rushes, at the roots of which Mr. Dawson, in 1847, captured the rare *Dromius longiceps* and the new *Trechus incilis*, are supplanted by healthy turnips: while the whole district is so changed, and in process of such thorough cultivation, that a very few years must effect the extinction of many of the present fen species of insects. However, it may be interesting to record the results of an entomological visit to the neighbourhood; the more so, on account of the physical metamorphosis to which it has been subject.

With a view of investigating as fully as we were able the remaining Coleoptera of the district, my friend Mr. Wollaston and myself took up our quarters on the 4th of August, at the Railway Inn at Holme, which has the triple advantage of being close to the station, close to the best entomological ground, and tolerably comfortable. The weather during the week of our visit was anything but propitious; heavy showers of rain continually prevented the use of sweeping-nets: we nevertheless, by dint of assiduous working, managed to capture and set up nearly three thousand specimens. The following list, containing some of our captures, may I think be considered a fair representative of the autumnal Coleoptera of the locality.

Odacantha melanura. Occasionally at the roots of herbage.

Dromius imperialis. One specimen, by sweeping.

Dyschirius æneus. On mud by railway-cuttings, Mr. Wollaston.

Loricera pilicornis. Abundant.

Panagæus crux-major. Occasionally at sides of Lode and railway.

Agonum Thoreyi. One specimen, by examining bundles of colts'-grass.

„ *gracile*, *picipes*, and *parumpunctatum*.

Olistophus rotundatus. Sparingly.

Platyderus ruficollis.

Synuchus nivalis.

Argutor erythropus, *vernalis*, and *minor*. Beneath cut sods of fen-grass.

Omaseus aterrimus. Two specimens.

Stomis pumicatus.

Patrobus rufipes.

Oödes Helopoides. Sides of Holme Lode.

Amara eurynota, *obsoleta* and *familiaris*.

Curtonotus convexiusculus. Abundant.

Anisodactylus binotatus, with var. *Harpalus rufitarsis*, *St.*, in profusion.

Stenolophus lateralis. Most abundant on banks of the Lode.

„ *Skrimshiranus*. Occasionally with the above.

Trechus placidus. From bundles of sedge.

Acupalpus meridianus. Sides of railway.

Peryphus Bruxellensis. Holme Lode, very abundant.

Notaphus Dejeanii. One example, Holme Lode.

Lopha assimilis. Common, but all the specimens immature.

Haliplus fulvus, *Fab.*, *flavicollis*, *Sturm*, *confinis*, *Steph.*

Cnemidotus impressus. Local.

Hydroporus pictus; occasionally. *H. lepidus*, *Oliv.* *H. assimilis*, *Payk.*; in shallow pools by railway. *H. parallelogrammus*; one specimen. *H. dorsalis*; not uncommon. *H. vittula*, *Erichs.*; one specimen. *H. memnonius*, *Nicol.*; rare. *H. Gyllenhalii*, *Schiodte*; rare. *H. angustatus*, *Sturm.* *H. granularis*, *Fabr.* *H. geminus*, *Fabr.*; in a ditch parallel to the Lode.

Noterus crassicornis. Not abundant.

Agabus chalconotus, *Paz.*; four specimens. *A. abbreviatus*, *Fab.*; in profusion, local. *A. maculatus*, *Linn.* *H. vitreus*, *Payk.* *H. bipunctatus*, *Fab.*; not uncommon.

Agabus ——— ? new species ? Habit of *A. Sturmii*, but smaller, more obtuse in front, and extremely convex above and below. One specimen taken by Mr. Wollaston under a cutting of turf.

Ilybius fenestratus, *Fab.* one specimen.

„ *guttiger*, *Gyll.* Occasionally.

Colymbetes pulverosus, *Steph.* Local; not uncommon.

„ *exoletus*, *Forst.* *C. Grapii*, *Gyll.*; one specimen.

Hydaticus transversalis, *Fabr.* Not abundant.

Dytiscus punctulatus, *Fabr.* *D. dimidiatus*, *Bergst.*

Hydrochus crenatus.

Hydrous piceus.

Hydrophilus caraboides.

Philhydrus melanocephalus.

Cyclonotum orbiculare.

Helochaeres lividus. Local.

Orthoperus curvimanus, *Mots*. Under rubbish near the edge of the former Mere; Mr. Wollaston.

Limnichus sericeus. Edges of Holme Lode; Mr. Wollaston.

Malachius sanguinolentus and *fasciatus*. By sweeping; banks of Holme Lode.

Rhinonchus tibialis, *crassus*, *bruchoides*. The two first in profusion amongst vegetation at the edges of the Lodes: the last scarcer; taken by Mr. Wollaston on *Polygonum Hydropiper*.

Bagotus binodulus. Water-plants, rare.

Notaris Scirpi. Not uncommon, at roots of herbage and in sedge.

Lixus productus. Two specimens, by sweeping sedge.

Apion vicinum. Rare, on banks of railroad opposite the windmill.

„ *Ervi*, *vorax*, *Loti*, *Hookeri*; rare: and *Viciae*, by Mr. Wollaston on sides of the Lode.

Auchenia 4-maculata. Taken by Mr. Wollaston at the side of Holme Lode.

Macrocnema erythrocephala, and var. *nigricollis*. In profusion from colt's-grass.

Halica pubescens, *Ent. Hefte*. This hitherto almost unique insect (in Britain) is not uncommon by sweeping upon the banks of Holme Lode, both at the end near the village, and also opposite the large willow-tree.

Thyamis holsatica. Rare; taken by Mr. Wollaston on the edges of Holme Lode.

Cassida vibex. Scarce.

Scymnus analis. By Mr. Wollaston.

By far the best locality in the neighbourhood is the Lode itself, which, commencing at the village of Holme, runs through the district of the former Mere: its sides, more or less uncultivated, are clothed with most luxuriant herbage, and produced everything (and that in greater profusion) which we captured in more remote localities. Generally speaking, the actual fen-land will not repay much investigation; while the dreary tract of country formerly covered by the Mere, hardly supplied us with a single insect.

With respect to water-beetles, the best localities are the *ends* of the stagnant ditches that supply the place of hedges among the fields adjoining the fen, especially those immediately below Yaxley village.

The water in these is kept up by dams, and harbours hosts of all the commoner species: the peat ditches that *drain* the fens and more recently reclaimed lands, are not worth examination.

HAMLET CLARK.

Northampton, September, 1852.

Note on the Porcupine (*Hystrix cristatus*).—A gentleman of my acquaintance, while doing duty with the garrison at Gibraltar, a few years since, had the following curious circumstance pass under his notice at that place:—A brother officer had two well-bred English bull-dogs, which their master on one occasion encouraged to enter a porcupine's hole, for the purpose of attacking the occupant. The sound of a considerable scuffle in the interior of the hole speedily succeeded, followed by a cry from one of the dogs, which led the owner to believe that it was mortally wounded. Such, on opening the hole, proved to be the case, the dog which was killed having been pierced by fourteen of the porcupine's quills, and the surviving dog by seven. These quills were entirely disengaged from the body of the porcupine, and appeared to have been driven into the dogs with great force. The dog which was killed had one quill in particular, which had entered its chest, and had been driven through the heart; and this quill was so firmly imbedded, that the dog could be entirely lifted from the ground by the quill, without the latter being loosened; and the surviving dog had a quill so firmly infixed in its skull, that it could only be withdrawn by the vigorous use of powerful forceps. My informant did not become certainly acquainted with the manner in which the porcupine thus wounds its assailants, but is of opinion that it does so by partially curling itself into a ball, and then very suddenly springing open again, by which means he thinks that it drives its spines into such of its assailants as are in contact with it.—*J. H. Gurney; Easton, Norfolk, October 7, 1852.*

Food of the Honey Buzzard (*Pernis apivorus*).—A female specimen of the honey buzzard (which had nearly completed its adult plumage) was shot at Linford last spring. The inside of the throat of the bird was covered with small pieces of the eggs of the song thrush. For this information I am indebted to the bird-preserved at Swaffham, where I saw the bird. An immature male honey buzzard was also trapped near Swaffham, at a wasp's nest, about the 11th of last September.—*L. H. Irby; Saham, Norfolk, November 1, 1852.*

The Shore Lark (*Alauda alpestris*) *breeding in Devonshire*.—On the 12th of July, 1851, my friend, W. W. Buller, Esq., found a nest of the shore lark near Exmouth, South Devon, among some bent grass close to the sea, and containing four eggs. The eggs were very much like those of the woodlark (*Alauda arborea*). The hen bird was caught on the nest, and is in my friend's possession, stuffed.—*T. L. Powys; Lilford Hall, Northants, October 9, 1852.*

Nesting of the Siskin (*Fringilla spinus*) *in confinement*.—The following account of the nesting of the siskin in confinement may perhaps interest some of the readers of the 'Zoologist,' although, after the similar instances which have been recorded, I am not inclined to consider it as otherwise than the usual result of keeping a pair of

those birds throughout the summer, under favourable circumstances ; but perhaps the extreme haste they showed to build, and the pertinacious pursuit of their object under difficulties, is worthy of note. Being desirous of obtaining some siskin's eggs for my cabinet, I procured a pair of birds, the first week in May last. On the 12th I turned them into a small aviary, which I fitted up with the freshly-cut tops of two spruce-fir-trees, about five feet in length, and partly covered the bottom with turf and moss, leaving the rest gravel. They were furnished with old nests of the stonechat, lesser white-throat, lesser redpoll, chaffinch, bullfinch, and wren, in order that they might have an extensive choice of materials. Two days after, I discovered that they had begun to build ; and on the 21st, having observed that the hen bird had been, for the last day or two, often seated on the nest, now completed, I examined it, and found it to contain two eggs. On the 25th, there being five eggs, I removed them, together with the nest, at the same time inserting more materials, as before. Two days after, they began again to build, in exactly the same situation as before ; and on the 1st of June the nest contained an egg. I waited for some days, to allow the hen to begin to sit, and then removed five eggs, substituting those lesser redpoll's which were partially incubated. These the hen siskin immediately began to brood ; and in due time they were hatched ; but, alas ! hurriedly run-up houses do not last long, whether men or birds be the builders ; and the increasing weight of the young redpolls broke through the bottom of the nest ; and when they were precipitated on the ground, their foster parents took no notice of them : accordingly they perished. Nothing daunted, however, the siskins again summoned their energies, and built a third nest, but so badly, that had it not been for the intervention of a kind friend of theirs, who placed a platform of moss as a support to it, a similar disaster must have occurred ; and about the last day of June a single egg was laid. No other being added to it, it was removed on the 3rd of July, and a bullfinch's, which was the only egg of any of the *Fringillidæ* then to be met with, substituted. On this the hen siskin sat steadily, and with a devotion worthy of a higher reward ; but in about three weeks' time, no young bird appearing, hope and patience forsook her, and she her nest. The three nests are now before me. The first is composed of green moss intermixed with small twigs, stems of grass, and rabbit's down, and lined with the last-mentioned material, and one or two feathers : it is clumsily and untidily constructed ; it is about four inches in outside, and two inches in inside, diameter, and about one inch deep. The second is built of much the same materials as the first, but with scarcely any green moss, and a much greater quantity of grass-stems ; it has a neater, though flimsy, appearance, and more resembles that of the lesser redpoll than did the first. The third is much smaller and more compact than either, more feathers are used in its construction, and the whole fabric better woven, but badly built withal. The eggs are all of a greenish white ground-colour, some being spotless, and others marked with rust-colour, either in well-defined dark spots about the larger end, or cloudily dispersed over the whole surface. They differ a good deal in size, the last-laid specimen being perhaps half as large again as some of the others. In shape they are rather elongated. As far as I had an opportunity of judging, they would all have produced chicks.—*Alfred Newton ; Elveden Hall, Thetford, October 7, 1852.*

Siskin (Fringilla spinus) Breeding in Ireland.—On Thursday last, the 22nd of July, I observed a female siskin at the entrance-gate to Powerscourt Waterfall, Co. Wicklow. It appeared as familiar as the robin, allowing me to approach within a few yards of it. Must not this bird have bred there ? I know some people are sceptical

as to the occurrence of the siskin, in summer, in Ireland.—*John Robert Kinahan ; Donnybrook, near Dublin, July 24, 1852.*

Occurrence of the Blue-throated Warbler (Sylvia Suecica) in South Devon.—About the 15th of last September, Mr. Buller shot a specimen of the blue-throated warbler in a furze-brake near Whimble, South Devon.—*T. L. Powys ; Lilford Hall, Northants, October 9, 1852.*

Carrier Pigeons.—"Sir John Ross took with him four carrier pigeons belonging to a lady residing in Ayrshire, intending to liberate two of them when the state of the ice rendered it necessary for him to lay his vessels up for the winter, and the other two when he discovered Sir John Franklin. A pigeon made its appearance at the dove-cote in Ayrshire on the 13th of October, which the lady recognized by marks and circumstances that left no doubt on her mind of its being one of the younger pair presented by her to Sir John. It carried no billet ; but there were indications, in the loss of feathers on the breast, of one having been torn from under its wing. Though it is known that the speed of pigeons is equal to 100 miles an hour, the distance from Melville Island to Ayrshire, being in a direct line about 2,400 miles, is so great, that evidence of the bird having been sent off about the 10th of October must be had, before that we can well believe that no mistake was made in the identification of the individual that came to the dove-cote. Sir John's letters from Lancaster Sound mention that when he wrote he had the pigeons on board."—*From Sir John Richardson's 'Journal of a Boat-voyage through Rupert's Land and the Arctic Sea,' vol. ii. p. 157.*

Carrier Pigeons.—"Next—indeed we should say before the balloons—as a means of communication, came carrier pigeons. When first proposed, in 1850, many people laughed at the idea of a bird doing any service in such a cause ; and may be, might have laughed yet, had not a carrier pigeon, despatched by Capt. Sir John Ross, from his winter quarters in 1850, actually reached its home, near Ayr, in Scotland, in five days. In our Expedition none of these birds had been taken ; but on board the 'Felix' Sir John Ross had a couple of brace. I plead guilty, myself, to having joined in the laugh at the poor creatures, when, with feathers in a half-moulted state, I heard it proposed to despatch them from Beechey Island, in 74° N. and 92° W., to the meridian of Greenwich and 56° N. latitude, even though they were slung to a balloon for a part of the journey. At any rate it was done, I think, on the 6th of October, 1850, from Assistance Harbour. Two birds, duly freighted with intelligence, and notes from the married men, were put in a basket, which was attached to a balloon in such a manner that, after combustion of a certain quantity of match, the carrier pigeons would be launched into the air to commence their flight. The idea being that they would fetch some of the whaling vessels about the mouth of Hudson's Straits ; at least so I heard. The wind was then blowing fresh from the north-west, and the temperature below zero. When we in the squadron off Griffith's Island heard of the departure of the mail, the opinion prevalent was that the birds would be frozen to death. We were mistaken ; for, in about 120 hours, one of these birds, as verified by the lady to whom it had originally belonged, reached her home, and flew to the nest in which it had been hatched in the pigeon-house. It had, however, by some means or other, shaken itself clear of the packet entrusted to its charge. This marvellous flight of 3,000 miles is the longest on record ; but, of course, we are unable to say for what portion of the distance the bird was carried by the balloon, and when or where liberated ; that depending upon the strength and direction of the gale in which the

balloon was carried along." — *From Lieut. Sherard Osborn's 'Stray Leaves from an Arctic Journal,' p. 174.*

Hybrid Grouse.—I have lately acquired a specimen of grouse having an appearance of hybridism from two of the finest species of game birds in the country. It came, with other game, to Mr. Muirhead, game-dealer, Manchester, from the moors near the Marquis of Breadalbane's estate, Perthshire, a locality enumerated by the late Professor Macgillivray as one of the few places where the capercaillie may yet be found in a semi-naturalized state. The specimen possesses many characteristics which confirm its parental descent from a male of the black grouse (*Tetrao Tetrix*) and a female of the capercaillie (*T. Urogallus*), although in its general appearance it would be looked upon as a variety of the black cock, mottled over with white and brown; yet, upon a closer examination, the superior strength of its feet, and large black bill, together with the peculiar markings of the plumage, give sufficient proofs of its consanguinity to the capercaillie. The plumage, with the exception of the tail, has none of the glossy blue-black hue of the ordinary specimens of the black cock; the head, neck, and breast are mottled and barred with reddish brown and black; the throat is barred with black and white; the back is dull black and brown, with white, irregularly-shaped marks; the belly, and as far as the vent, is dull black, with spots of white tipping the feathers down the centre, just as they are found on the belly of the male capercaillie; the wings are brown and dull black, with numerous small bars and spots of white, but without the white lower wing-coverts of the black cock; a tuft of white feathers at the shoulders, under the wings freckled with brown and black; the flanks over the thighs, vent, and under tail-coverts barred with dull black and white, as in the capercaillie; the tail is not fully developed, and in its present state is an anomalous mixture of the differently-shaped tails of its parents; the feathers are glossy black, four in the centre and the two outer ones two inches and a half longer than the others, the centre ones rounded and shaped more like the tail of the capercaillie than those of the black cock, but the two outer feathers, as well as two others only half grown, have a tendency to curve outwards, just as the four outward tail-feathers do in the black cock; the feathers on the legs are freckled with black and white; the legs are strong, and the claws have larger pectinations than in the ordinary black game; the bill is strong and black; and in size the bird altogether exceeds the black game, but yet is not so large as the female capercaillie. If it had been fortunate enough to have escaped the gun till the month of February next, it would have been a finer and a more richly-marked bird.—*John Plant; Salford Royal Museum, October 5, 1852.*

Occurrence of the Pratincole (*Glareola torquata*) in *Devonshire*. — On the 7th of September, 1851, my friend W. W. Buller, Esq., saw two collared pratincoles on the Warren, a large sand-bank at the mouth of the river Exe, South Devon. They appeared very tame, occasionally alighting on the sand, on which their movements very much resembled those of the ring dotterel. Their manner of flight was very much like that of the swallow.—*T. L. Powys; Lilford Hall, Northants, October 9, 1852.*

"The Biter bit." — As Mr. Wm. Mills was going over his farm" (in Upper Beeding, Sussex), "some few days since, he observed something white in one of the ditches, which appeared at first sight to be the clothes of a female, but on approaching it he found it to be a large heron, standing on its feet with its wings projecting and the head under water. Wondering what could fix it in such a curious position, he, by the

aid of his walking-stick, drew it to the bank, when he found a large eel hanging from its mouth, which weighed 1 lb. 7 oz. The bird, most likely a young one, had evidently attempted to swallow the fish, some inches of which were down its throat, but from its great weight and strength perhaps its tail entwined some of the flags, so that it drew the bird's head under water until it was suffocated; the eel was not able to extricate itself, for it also was dead. Had it been an old bird, it would have shown more sagacity, and first landed such a prize before it had attempted to swallow it."—*From the 'Sussex Express' of Saturday, October 30, 1852.*

Curious Death of a Dab-chick, or Little Grebe, (Podiceps minor).—A specimen of the little grebe was picked up dead by the side of the river at Witchingham, apparently choked in an attempt to swallow a bull-head or miller's thumb (*Cottus Gobio*), as the spines at the end of the gills of the fish were sticking in the dabchick's throat.—*L. H. Irby; Saham, Norfolk, November 1, 1852.*

Food of the Black-headed Gull, (Larus ridibundus).—As Mr. Gurney has mentioned the mouse-catching propensities of the black-headed gulls at Scoulton (Zool. 3563), it may be worth adding that I have often seen them hawking after cockchafers late in the evening. I proved this by shooting one and examining it.—*Id.*

Note on the American and Indian Darters in Captivity; and on the known Species of the Genus Plotus.—The Rev. A. C. Smith, in his second paper on the curious occurrence of the Plotus Anhinga near Poole (Zool. 3654), quotes an interesting extract from a communication by Mr. Waterton, in which that gentleman states he has never heard of this bird having been bred up tame. It may therefore be worth while to call attention to the very full account of the habits of this species, as observed in North America, given by the late Mr. Audubon in his 'Ornithological Biography' (iv. 136), wherein that gentleman mentions two distinct instances in which these birds had been successfully brought up from the nest, and subsequently kept in a state of domestication with considerable facility. I have also been informed that the Indian species (probably Plotus melanogaster) has been similarly tamed by Mr. Blyth, of Calcutta, and has been found to exhibit considerable docility and familiarity. As Mr. Smith, in his first paper (Zool. 3601), speaks doubtfully of there being more than two species of the genus Plotus, it may be desirable to add that four distinct species are recognized in Messrs. Gray and Mitchell's 'Genera of Birds,' a work which is of most deservedly high authority in such matters. These species are:—

1. Plotus Anhinga, (*P. melanogaster*, β . γ . of Latham); limited to the American continent, and figured by Audubon, pl. 316, and by several other authors also.
2. Plotus melanogaster; figured in Pennant's 'Indian Zoology,' pl. 12. Probably exclusively Asiatic, but its geographical boundaries, as far as I am aware, have not yet been well defined. It occurs in India, and is also included in Dr. Horsfield's 'Catalogue of the Birds of Java,' and is mentioned by Latham as being found in Ceylon.
3. Plotus Congensis, (also called *P. Levaillantii* and *P. rufus*); figured in Buffon's 'Planches Enluminées,' pl. 107, and in Temminck's 'Planches Coloriées,' pl. 380. This is the African species, but M. Temminck states that he has also received specimens from the Indian Archipelago.
4. Plotus Novæ-Hollandiæ; figured in Gould's 'Birds of Australia,' and in Gray's Genera, and is apparently limited to the Australian continent.

—*J. H. Gurney; Easton, Norfolk, November 3, 1852.*

"*Sporting by Steam*.—On Wednesday, September 29, as the express train of the Morayshire Railway was crossing the Loch of Spynie, the funnel of the engine struck and killed a bird of the species called the northern diver, which was flying with a fish in its bill. On the bird being secured, it was found to measure from the tip of the tail to the beak 3 feet, and from wing to wing 4 feet 4 inches. Its prey was of goodly size, being nearly 10 inches in length."—*Elgin Courier*, October 1, 1852.

[I have seen the animals above alluded to. They are the great cormorant (*Phalacrocorax Carbo*), principally known as "The Scarf," and a flounder (*Platessa Flesus*), most likely from the locality. The bird is well stuffed and set up by the engine-driver as a trophy; the fish is replaced in the position in which it was first seen, with little more than the tail visible, between the extended mandibles of the cormorant, so that the species could not with certainty be determined at a glance. — *G. Gordon*; *Birnie*, by *Elgin*, October, 1852.]

Occurrence of the Gannet (*Sula Bassana*) in *Cambridgeshire*. — A fine adult specimen of this bird was shot last week in Fulbourn Fields, *Cambridgeshire*. — *Fredk. Bond*; *Kingsbury*, September 26, 1852.

Occurrence of the Egyptian Goose (*Chenalopex Egyptiacus*, *Gould*) in *Cambridgeshire*. — A fine adult specimen of this bird was likewise shot last week in Fulbourn Fields. It might have escaped from some place, but he was in the most beautiful and perfect condition, and showed no marks of having been in confinement. — *Id.*

Singular Capture of the Porbeagle Shark, (*Lamna Cornubica*, *Flem.*) — On the morning of Friday, October 15, two of these huge denizens of the deep were killed in the Moray Firth—one in Lossiemouth Bay, and the other off Port Gordon, some ten or twelve miles distant from each other. They were caught much about the same hour, and what is most singular, by the same means, namely, by no stronger engine than the common haddock-line. These sharks, which in neither locality were seen to be accompanied by others of the same species, had most likely been snatching some of the fish from the hooks for their breakfast, and in their evolutions had got a fold or two of the line twisted round their tails, which, from their consistence and construction, are most likely to be thus entangled. To the no little amazement of the fishermen, they saw their buoys flitting about and disappearing in a style which no drifting of the boat or fouling of the line on the bottom could account for. By and by they became aware that some large animal was attached to the frail thread — for a thread it was compared with the strength of the fish; and in both cases there were, as in angling with a large salmon, much play and sport, and a long run, which at last exhausted the sharks, when they were pulled by the tail to the boats. The Port Gordon specimen measured 7 feet 2 inches in length, and 4 feet 2 inches in girth at the thickest part. It was soon cut up, and, save some of the fins and the back-bone, was speedily entombed in the mussel-midden, whence one side was caused to be excavated for identification of the species some days afterwards. The one got in Lossiemouth Bay was exhibited in Elgin and in some of the adjacent towns. It measured a foot more in length than the other, and was in all respects the larger animal of the two. — *Geo. Gordon*; *Manse of Birnie*, by *Elgin*, *N. B.*, November 8, 1852.

Notes on the Distribution of Insects in Geographical Regions. — The resemblance of the productions of mountains from the bases to the summits to those of the hemispheres from the equator to the poles, or to some shorter and intermediate space, has often been remarked; and the numerous elevations of land present an equal number of more or less perfect images of each hemisphere. The valley of each river, from its source to the sea, comprising the valleys of its tributaries, may form a natural division in the geographical distribution of creatures, and the aquatic species have generally the most extensive range along its course. The valleys near each other, and of small extent, and of mostly similar productions, may be grouped together, and those of the tributaries of the largest streams may form subdivisions in the descriptions of these regions. The following list contains the names of some of the principal river-valleys, omitting those of the British Isles: —

I. NORTHERN OCEAN VALLEYS.

1. Tora valley
2. Alten

II. NORTH SEA VALLEYS.

3. Glommen
4. Odderan
5. Clara
6. Scheld
7. Ems
8. Rhine
9. Weser
10. Elbe

III. BALTIC VALLEYS.

11. Oder
12. Vistula
13. Memel
14. Dvina

IV. GULF OF BOTHNIA VALLEYS.

15. Ljusna
16. Indals
17. Angermanna
18. Windel
19. Pitea
20. Lulea
21. Tornea

V. GULF OF FINLAND VALLEYS.

22. Volga

VI. WHITE SEA VALLEYS.

23. Onega
24. Dvina
25. Meyen

VII. EAST ARCTIC OCEAN VALLEYS.

26. Olia
27. Tudejesko
28. Kolima
29. Anadir

X.

30. Petchora

31. Obe

32. Genesei

33. Piasina

34. Khatanga

35. Anabarsk

36. Olia

37. Olensk

38. Lena

39. Lana

40. Anabara

41. Indigurca

42. Kolima

VIII. SEA OF KAMTCHATKA VALLEYS.

43. Anadir

44. Apuka

45. Kamchatka

IX. SEA OF OKOTSK VALLEYS.

46. Talovka

47. Kova

48. Okota

49. Ouda

50. Amoor

X. YELLOW SEA VALLEYS.

51. Hoangho

52. Yangtsu-Kiang

53. Pei-ho

XI. CHINESE SEA VALLEYS.

54. Hong

55. Sang-Koi

56. Min

57. Camboja

XII. GULF OF SIAM VALLEYS.

58. Menam

59. Sulwein

60. Irawaddy

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XIII. BAY OF BENGAL VALLEYS.

- 61. Brahmapootra
- 62. Ganges
- 63. Mahanuddy
- 64. Godavery
- 65. Coleroon

XIV. INDIAN OCEAN VALLEYS.

- 66. Darling
- 67. Swan
- 68. Gascoigne
- 69. Gordon
- 70. King's
- 71. Arthur
- 72. Emu
- 73. Tamu
- 74. Forth
- 75. Mersey
- 76. Prosser's
- 77. Derwent
- 78. Huon

XV. SOUTH PACIFIC OCEAN VALLEY.

- 79. St. Paul's

XVI. S. E. ATLANTIC VALLEYS.

- 80. Orange
- 81. Fish
- 82. Bembarrao
- 83. Congo
- 84. Coanza

XVII. ARABIAN SEA VALLEYS.

- 85. Mapota
- 86. King George
- 87. Sofala
- 88. Zambezi
- 89. Zebec
- 90. Nerbudda
- 91. Indus

XVIII. PERSIAN GULF VALLEYS.

- 92. Euphrates
- 93. Tigris
- 94. Kerah
- 95. Tab

XIX. E. N. ATLANTIC VALLEYS.

- 96. Niger
- 97. Quarra
- 98. Gambia
- 99. Senegal
- 100. Guadalete
- 101. Segura

102. Guadiana**103. Guadalquivir****104. Tagus****105. Minho****106. Douro****107. Mondego****108. Garonne****109. Loire****110. Seine****XX. MEDITERRANEAN VALLEYS.****111. Nile****112. Orontes****113. Meander****114. Vardar****115. Apsus****116. Eas****117. Alphæus****118. Eurotas****119. Peneus****120. Lycus****121. Tanyras****122. Leontes****123. Manitza****124. Adige****125. Po****126. Rhone****127. Mejerda****128. Tiber****129. Arno****130. Ebro****131. Garigliano****XXI. DEAD SEA VALLEY.****132. Jordan****XXII. BLACK SEA VALLEYS.****133. Amasia****134. Kouban****135. Dnieper****136. Kizil****137. Danube****138. Sakaria****139. Dniester****140. Don****XXIII. CASPIAN SEA VALLEYS.****141. Volga****142. Jaik****143. Oural****XXIV. ARAL SEA VALLEY.****144. Oxus**

XXV. W. S. ATLANTIC VALLEYS.

- 145. La Plata
- 146. Paraiba
- 147. Maranrind
- 148. Amazon
- 149. Doce
- 150. St. Francis
- 151. Hutuque
- 152. Negro
- 153. Colorado
- 154. Soladillo
- 155. Paraguay
- 156. Paruna
- 157. Gallego
- 158. Camarines
- 159. Madeira
- 160. Para
- 161. Ueagala
- 162. Yupura

XXVI. W. N. ATLANTIC VALLEYS.

- 163. Surinam
- 164. Essequibo
- 165. Orinoco
- 166. Connecticut
- 167. St. John
- 168. St. Lawrence
- 169. Hudson
- 170. Susquehanna
- 171. Great Pedu
- 172. Alatomaha
- 173. George Town
- 174. Cape Town
- 175. Neuse

XXVII. GULF OF MEXICO VALLEYS.

- 176. Nassur
- 177. Bravo
- 178. Mississippi

179. Red and Black River

- 180. Lean
- 181. St. Bernard
- 182. Illinois
- 183. Akansas
- 184. Floras
- 185. Trinity
- 186. Sabine
- 187. Appalachiola
- 188. Pearl

XXVIII. HUDSON'S BAY VALLEYS.

- 189. Churchill
- 190. Port Nelson
- 191. Severn
- 192. Equan
- 193. Albany
- 194. Moose
- 195. Harricanaw
- 196. Rupert's
- 197. Main
- 198. Whale River

XXIX. W. ARCTIC OCEAN VALLEYS.

- 199. Mackenzie
- 200. Back's

XXX. NORTH PACIFIC VALLEYS.

- 201. Los Martires
- 202. Mescala

XXXI. GULF OF CALIFORNIA VALLEYS.

- 203. Colorado
- 204. Hiaqui
- 205. Culiacan

XXXII. CARIBBEAN SEA VALLEY.

- 206. Madalena

XXXIII. SOUTH PACIFIC VALLEYS.

- 207. Colan
- 208. Salado
- 209. Guayaquil

Francis Walker ; Piercefield, near Chespstow, October, 1852.

Occurrence of Vanessa Antiopa near London. — Whilst partridge-shooting on Friday last, with my friend Mr. Barlow, we saw a splendid specimen of that fine insect, Vanessa Antiopa, and have heard of the capture of others this season.—Fredk. Bond ; Kingsbury, Middlesex, November 1, 1852.

Erroneous Record of the Capture of Clostera Anachoreta.—I have seen the specimen of Anachoreta recorded by Mr. Weaver (Zool. 3399), and find that it is nothing but the common reclusa ; it does not differ in the least from the ordinary appearance of the species, except in perhaps being a little more ferruginous. If I had bred it, I should have thought nothing of it.—Henry Doubleday ; Epping, November, 1852.

Notes respecting Acherontia Atropos.—On the morning of the 6th of August I received from Thorngumbald, a village six miles distant, a very fine larva of *Acherontia Atropos*, which had been found the day before. The person who sent it informed me that if I went over I could probably find plenty more, he having obtained above a dozen in his own garden a short time before : I therefore lost no time in walking there, anxious to get as many as possible. On arriving at the village, and commencing my search, I found I was unfortunately rather too late, for on examining the potato-plots in the garden where so many had been captured, I perceived they had all gone under ground, nothing but the trimmed plants and enormous sized excrement being visible. The larvæ appear to be very stationary in their habits, not roaming about, but remaining in a comparatively small space, as appears from the bared branches of the plants and the excrements. I also remarked that they eat very little until within a short time of their full growth, when from their traces they must feed enormously, and although I searched for the remains of their earlier growths, I was unsuccessful. I afterwards visited some other potato-fields in the neighbourhood, and after some time was fortunate enough to find two full-grown larvæ. They are exceedingly difficult to discover, and I have little doubt that many were overlooked. The best plan is to cast the eye carefully over the plant until it is arrested by a projecting bare branch, trimmed of its leaves, and on a closer inspection a larva is sure to be found. On my arrival at home I placed my larvæ in a breeding-box, with plenty of food : on the 12th they went into the ground. I then removed the box into a fern and orchid stove, being anxious to have the perfect insects this year. On the morning of September 24 I was gladdened by the sight of a splendid specimen, and in a few days more the other appeared. I found the moths very pugnacious, for on disturbing them with my fingers they would exhibit a strong inclination for fighting, striking with their strong fore-feet, and uttering at the same time their well-known peculiar squeak, which reminded me as much as anything of the note of the marsh titmouse, only much shriller. It does not appear to me to be difficult to account for the periodical plenty and scarcity of this insect. In warm seasons, similar to the one just past, the larvæ arrive at maturity and undergo their change into the pupa state in August, the moth appearing in the following month : their eggs would consequently perish from the low temperature of the ensuing winter. Should the summer, however, not be a very warm one, the larva undergoes its change in September, and remains underground until the following June. This seems to be the most probable reason why the larvæ are found in great plenty some years, and then years and years will elapse without one being seen.—*G. Norman ; Hull, Oct. 9, 1852.*

Notes on the Death's-head Sphinx (Acherontia Atropos).—Not being an entomologist, I do not know whether the eyes of this insect have been observed to be luminous in the dark, but I noticed this to be the case in a living specimen which came into my possession a fortnight since ; the light thus proceeding from the eyes was soft and subdued, and though decidedly luminous, yet reminded me of the lustre of an opal. This specimen, when provoked by meeting a finger or other unexpected obstacle in its way, when crawling about, frequently uttered the mouse-like squeak which is known to be characteristic of the species. Both this individual, and another which was taken at Cromer at the same time, was extremely tenacious of life, but at length yielded to the effect of repeated doses of Prussic acid.—*J. H. Gurney ; Lowestoft, October 11, 1852.*

Occurrence of Deilephila Celerio at Welton.—As I see all our entomological authors consider this insect as rare in Britain, and Stephens even deems it a moot question whether it be a British species at all, I consider it may be as well to record that

I had a living mature specimen brought to me yesterday, which had been caught by a farmer's lad here. The lad, from its being unlike any moth he had seen, was induced to send it to his master, who gave it to me; and a splendid specimen it is, apparently only just escaped from the chrysalis.—*Thos. Thompson; Welton, near Hawden, September 22, 1852.*

Voracity of the Dragon-fly.—The fact mentioned by Mr. Scott, as to the voracious propensity of the large dragon-fly (Zool. 3628), is corroborative of a similar one, recorded by me in the 'Entomological Magazine,' (i. 518). — *J. F. Stephens; Eltham Cottage, Foxley Road, October 18, 1852.*

Proceedings of the Entomological Society.

November 1, 1852.—*J. O. Westwood, Esq., President, in the chair.*

The following donations were announced, and thanks ordered to be given to the donors:— 'The Zoologist' for November; by the Editor. 'The Athenæum' for October; by the Editor. 'The Literary Gazette' for October; by the Editor. 'Entomologische Zeitung' for August, September, and October; by the Entomological Society of Stettin. 'Annals of the Lyceum of Natural History of New York,' Vol. v. Nos. 4, 5, and 6; by the Lyceum. 'Monographie des Guêpes Solitaires, ou de la Tribu des Euméniens,' par H. F. de Saussure; cahier 2: Paris, 1852; by the Author. A lithograph portrait of Dr. J. E. Gray, framed and glazed; by Mr. F. Smith. Four specimens of *Coremia erutaria*, and two of *Eidophasia Messingiella*; by Mr. J. B. Hodgkinson. Two specimens of *Hydræcia Petasitis*; by Mr. N. Greening. A collection of British Anoplura, or bird-lice (named by Mr. Denny), three large store-boxes, and some miscellaneous insects; by the Rev. Leonard Jenyns. A series of illustrations of the natural history of *Vespa Britannica*; by Mr. F. Smith. A box containing sixty species of British spiders, preserved in spirit in small glass tubes; by Mr. R. H. Meade.

A letter accompanied the last-mentioned donation, in which Mr. Meade says:—

"The species are arranged and named according to the catalogue recently published by Mr. Blackwall in the 'Annals and Magazine of Natural History.' The species are mostly very common, and my motive in sending them to the Society is not to present them with anything rare, but to show what I consider to be the best method of preserving specimens of this class of animals, which cannot, like true insects, be kept dry, without entirely losing their characteristic forms. When placed in small glass tubes, filled with spirit of wine and well corked, they may be preserved for any length of time, and, except for purposes of critical examination, may be sufficiently seen, without removal from the tube, for the purpose of determining the species."

Mr. Boyd exhibited a fine *Vanessa Antiopa*, and specimens of *Luperina cespitis*, *Depressaria Carduella*, *D. rotundella*, *D. pallorella*, and other species of Lepidoptera, recently captured in the Isle of Wight.

Major Sheppard exhibited a hermaphrodite *Polyommatus Alexis*, taken this year in Hainault Forest. The right side is male and the left female, as is usual in such cases.

Mr. Winter exhibited a fine *Chærocampa Nerii*, taken at Brighton; a remarkable variety of *Spilosoma Menthrastris*, with very large black spots on the under wings; and a singularly pale variety of *Oporabia dilutata*.

Mr. Weaver exhibited a quantity of insects, taken by him this year in Perthshire. The Coleoptera included *Hylecætus dermestoides*, *Dircæa discolor*, *Lycus Aurora*, *Boleophagus crenicollis*, *Aphodius uliginosus*, *Hardy*, *A. Laponum*, *Pytho depressus*, and *Brontes flavipes*. Also *Cetonia ænea*, bred from larvæ which fed in ants' nests on the pupæ of the ants; the cocoons being covered with small bits of wood, and thus differing from those of *C. aurata*, which are formed entirely of earth. Among the Lepidoptera were *Oporabia neglectaria*, *O. precursoria*, *O. autumnaria*, *O. proximaria*, *O. filigrammaria*, *Plemysia lapidata*, *Tinea Picarella*, and *Psyche opacella*, var.? The different series of *Oporabia* under the above names Mr. Weaver believes to be distinct species, and that the *Psyche* he gets in Scotland is not *P. opacella*, which it most closely resembles, differing in the males being larger and having longer antennæ, and in the habits and formation of the cases of the larvæ.

Mr. F. Smith exhibited a series of illustrations of the natural history of the tree-wasp (*Vespa Britannica*), among which the President drew special attention to the fact that the larva makes a distinct case or cocoon within its cell.

Mr. Smith also exhibited various parasitic insects found in the nest of the same wasp.

Mr. Moor exhibited a walnut, in which he had found several Dipterous larvæ belonging to the family Muscidæ, some of which he had reared to the perfect state.

Mr. F. S. Saunders exhibited some Chalcididæ, parasitic in the nests of an *Osmia*, and some Dipterous parasites on a *Pompilus*. Also, a complete series of illustrations of the natural history of six species of Stylopidæ; all brought by him from Albania.

Mr. Edwin Shepherd exhibited a variety of Lepidoptera recently captured near Dover, including *Agrotis saucia*, *Heliothis armigera*, *Hadena lutulenta*, *Spilodes sticticalis*, *Depressaria depressana*, *D. Pimpinellæ*, and a new species of *Glechia* allied to *vilella*.

Mr. Douglas exhibited the larvæ of several species of *Nepticula*, mining in leaves of various plants.

The President exhibited a curious cottony formation from the body of the larva of a *Sphinx*, forwarded from China by Mr. J. C. Bowring. It consisted of the cocoons of a parasitic *Eurytoma*, and some of the perfect insects were left entangled.

The President also exhibited some of the plates of M. Emile Blanchard's new great work entitled '*L'Organisation du Règne Animal*.'

Mr. Moore communicated the following extract from '*Allen's Indian Mail*,' of October 5, 1852.

"*Gigantic Spiders*.—Captain Sherwill, in an expedition to the Kurrukpoor Hills, south of Monghyr, found upon the summit of Maruk, a table-topped hill of 1,100 feet elevation, several of the gigantic webs of the *Epeira* spider, some of which measured (including the guy-ropes) from 10 to 20 feet in diameter, the reticulated portion being about 5 feet, in the centre of which the spider, of a formidable size and very active, sits waiting for prey. 'The webs' he says 'from their great strength offered a sensible resistance when forcing our way through them; in the web of one of the spiders we found a bird entangled, and the young spiders, about eight in number, feeding upon the carcass. The bird was, with the exception of his legs and beak, entirely enveloped in web, and was much decomposed; the entwined web had completely pinioned the wings of the bird, so as to render his escape impossible. The bird was about the size of a field lark, and was near the centre of the web; the old spider was about a foot

above the bird; we secured, measured and bottled him. Its dimensions were 6 inches across the legs, and it was armed with a formidable pair of mandibles."

Mr. Douglas read the following extract from the 'Literary Gazette':—

"M. Bazin, an eminent French agriculturist, has made observations in Picardy and Burgundy, which satisfy him that the potato-disease is caused by microscopic insects, which alight on the leaves in the night-time, and disappear almost instantaneously on the slightest alarm, into the earth. The depredations of these insects cover the leaves with yellow spots, which turn black afterwards; and the insects also attack the root. It has generally been assumed that the malady consisted in a fungus growing on the plants: but M. Bazin is convinced that the fungus is exclusively caused by the insects. These same insects, it appears, have begun to attack melons."

The following remarks on the "fly-blight" in Australia, by Mr. Spence, were read:—

"In a review in the September number of 'Blackwood's Magazine' (p. 309), of Col. Moody's 'Our Antipodes,' containing an account of his travels in Australia, mention is made of a disease in the human eye, called the 'fly-blight,' attended with acute inflammation and temporary loss of sight, and caused by some species of fly. These insects, Col. Moody observes, 'are the common fly, harmless in Europe. The blight is occasioned either by their bite, or the deposition of their larvæ, and is most disastrous to working men.' And he then goes on to observe, 'Mr. Icely's [a gentleman he was visiting] daughters invented the "Fitzroy-Paramouche," a net to hang from the hat over the face, and although the meshes were large not to obstruct the air, the flies ventured not within.'

"To two points in this extract I beg to call the attention of the Entomological Society.

"The first is, as to the desirableness of ascertaining what is the species of fly which causes the 'fly-blight.' Col. Moody is no doubt in error in supposing it to be the 'common fly,' if by this term he means our house-fly, (*Musca domestica*); and a great service would be rendered to the science, if any members of the Society who may have friends in those parts of Australia where the fly-blight prevails, would request them to send three or four specimens of the fly that causes the disease, which might be done with small trouble, by killing them by means of slight pressure, and gumming them on a piece of paper inclosed in a letter.

"The second point is as to the remarkable confirmation which the ingenious and valuable invention by the Misses Icely of the 'Fitzroy-Paramouche' affords of the efficacy of the Italian plan of excluding flies from rooms by nets with wide meshes, which I brought to the notice of our Society eighteen years ago (Trans. Ent. Soc. i. 1), and which the late lamented Bishop of Norwich found so effectual (Id. ii. 55), when extended to protecting the face from them, merely by suspending a net from the hat; and also as to the probability which thence arises, that a similar contrivance might keep off gnats (*Culices*) from the faces of travellers in districts much exposed to them. This struck me long since, after my son, Mr. W. B. Spence, had pointed out (Trans. Ent. Soc. i. 7), that Herodotus had noticed the use made, upwards of two thousand years ago, by the Egyptian fishermen of their fishing-nets, to screen themselves from

the attacks of gnats; and I suggested to Sir John Franklin, whose probable fate now excites such intense interest throughout the civilized world, whether nets tied round the hat so as to hang over the brim, might not exclude gnats, which, in high latitudes, are often so great a pest in their hot though short summers. Until the experiment had been made, it did not follow that although flies and gnats could be excluded by wide-meshed nets from rooms, they could be equally excluded by similar nets hanging down loosely from a hat, and not tied round the neck; but the remarkable fact mentioned by Col. Moody, that 'though the meshes [of the Misses Icely's nets] were large, not to exclude the air, the flies ventured not within,' seems to render it highly probable that gnats might be excluded in this way, as well as the flies which cause the Australian fly-blight; and I would strongly advise travellers in districts greatly infested with gnats, to make the experiment. While within doors, the Chinese fumigating sticks (composed of the sawings of resinous woods, probably juniper, mixed with some inflammable material), which Mr. Fortune found so effectual in driving away gnats (Zool. 3501), or a similar preparation, would be the best defence, but this is obviously inapplicable while walking, when the 'paramouche,' if found as effectual against gnats as flies, would be invaluable."

The President said that in a fowl-pen covered with a net, the meshes of which were $1\frac{1}{2}$ inch wide, the flies never went through, and the poultry could never catch them, although they made many attempts to reach them sitting on the outside.

Mr. Edwin Sheppard wished to make known to members visiting the Lake district, that William Greenip, of Keswick, would be found a very civil and attentive guide, and that he possessed a considerable collection of the insects of the locality.—J. W. D.

Proceedings of the Society of British Entomologists.

October 19, 1852.—Mr. HARDING, President, in the chair.

The President observed that at the last meeting he had exhibited some specimens of *Harpalyce Achatinaria*, bred without the under wings: he had since visited the spot where he took the larvæ of the above insects, and had taken several specimens in the same imperfect state, tending to prove that this was not occasioned by confinement. He likewise mentioned that to his knowledge at least six specimens of that beautiful insect, *Vanessa Antiopa*, had been taken in different parts of the country, and one of *Catocala Fraxini*. In beating an old hedge near Deal, he found it swarming with that pretty beetle, *Pogonochilus pilosus*, a box of which he brought for distribution among the members.

In the report for September (Zool. 3631), in the remarks concerning the larvæ of *Macroglossa Stellatarum*, instead of taken *last* season, read taken *this* season.

November 19, 1852.—Mr. HARDING, President, in the chair.

The President exhibited a box containing several specimens of *Peronea*, in beautiful condition, from the coast of Deal; likewise some specimens of *Spelotes cataleuca*, *Boisduval* (*renigera*, *Stephens*), from the same place.—J. T. N.

